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BOTANICAL ABSTRACTS

Continued, beginning with the literature of 1926, in BIOLOGICAL ABSTRACTS

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BIOLOGICAL ABSTRACTS

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MAMMALIA

Editor: G[E]T S. MILLER. Associate Editor: REMINGTON KELLOGG

20598. ALLEN, GLOVER [M]**pe specimens of mammals in the Museum of Com**[pa]**ve Zoology.** *Bull. Mus. Comp. Zool.* 71(4): 227-28[5]. 1.—A list of the types or cotypes forming the basi[s] 99 names of both fossil and recent mammals. The [in]nation concerning each includes the original refere[nce] nature of the specimen, catalogue no., locality, da[te] llector, and equivalent name in current nomenc[la]ture (if different from the original name).—*F. H.*

20599. BAKER, FRANK [C.] **A new mammoth record for Illinois.** *Science* 80(2[0]8): 118. 1934.—Lower jaw, with teeth intact and 2 up[per] t molars of a Pleistocene *Elephas primigenius bore*[us] lived in the Sangamon interglacial interval, and [was] apparently 6 yrs. of age. —*A. G. W.*

20600. BARBOUR, [E.] HINCKLEY, and C. BERTRAND SCHULTZ. [A] w antilocaprid and a new cervid from the late Ter[tiary] **of Nebraska.** *Amer. Mus. Novitates* 734. 1-4. 1 pl. 1[934]. **PROANTILOCAPRA** [Antilocapridae] (p.3), near[est] irect ancestral line of *Antilocapra*, type *P. platy*[cera]* (p.3), skull and other skeletal elements, Lr. [Pl]e; *Dromomeryx* **trigonocorneus*** (p.4), ? Up. [Pl]e.

20601. BEAUFORT, [L.] e. Dasypterus intermedius H. Allen in Cuba. *Jou*[r.] *mmal.* 15(4): 316. 1934.—First record of the genu[s] uba.

20602. BENSON, S[.] . Description of a race of Dipodomys merriami [from] **Arizona.** *Proc. Biol. Soc. Washington* 47: 181-18[4].—*D. m.* **vulcani** (p.181); *D. m. merriami* Mearn[s] *D. m. olivaceus* Swarth).

20603. BENSON, S[.] . Descriptions of two races of Perognathus intern[edius] **from Arizona.** *Proc. Biol. Soc. Washington* 47: 1[9]. 1934.—*P. i.* **crinitus** (p.199), Arizona (type) and U[pper] *P. i.* **umbrosus** (p.200), Arizona.

20604. BERCKHEM[ER], F. Notiz über den Fund eines Urmenschenschädels i[n] **Schottern von Steinheim a. d. Murr.** *Palaeont. Ze*[it.] 15(2/3): 224. 1933.—Records the discovery of a hu[man] kull of Neanderthal type in a deposit of Steinheim [in] lacial age.

20605. BHIDE, P. [N.] **Notes on some rats damaging crops in Khandesh an**[d] **Deccan.** *Agric. and Live-stock in India* 4(3): 275-[8] pl., 4 fig. 1934.—The 3 spp. of rats, in order of d[estr]iveness to crops in Khandesh, are *Gunomys kok*, *Mia meltada* and *Tatera indica*. A correlation betwe[en] infall and increase in the rat population is indica[ted] umigation as a control measure seems fairly success[ful] pecially with *Millardia*.—*C. V. Green.*

20606. BOAS, J. [E. V.] **Über die verwandtschaftliche Stellung der Gattu**[ng] **tilocapra und der Giraffiden zu den übrigen Wiederk**[äuern.] *K. Danske Videnskab. Selskab. Biol. Medde*[l.] 1(3): 3-15. 3 pl. 1934.—Some skeletal characters atomical characters of soft parts of pronghorn and [gi]e show affinity with the deer, others with the C[a]nia. The pronghorn arose from the deer, through giraffe, and is the forerunner of the Cavicornia. *Mus* shows close affinity with Cavicornia but it also originated with the deer, by way of the giraffe.—*O. J. Murie.*

20607. BORISIAK, A. A. O novom mastodonte iz nizhne-mioſsenovykh otlozheniĭ Kazakstana. (A new Mastodon from the Lower Miocene sediments of Kazakstan.) [In Russ. with Eng. summ.] *Doklady Akademii Nauk SSSR, Novaĭa seriĭa (Compt. Rend. Acad. Sci. URSS, nouv. sér.)* 1. 34-39. 1 fig. 1933.—*Mastodon* (*angustidens* var.) **atavus*** (p.34), Jilančik beds of the Turgai continental deposits, descr. from complete body and limb skeleton, lower jaws, and 4 tusks.

20608. BROWN, C. EMERSON. Captive pigmy elephants in America. *Jour. Mammal.* 15(3): 248-250. 1934.—Notes on rate of growth of a captive *Elephas cyclotis* that attained a height of 6 ft. 7 in. at an age of about 11 yrs.

20609. BRUCE, H. M., and E. HINDLE. The golden hamster, Cricetus (Mesocricetus) auratus Waterhouse. Notes on its breeding and growth. *Proc. Zool. Soc. London* 1934(2): 361-366. 1934.—General descr. of the growth and reproduction of a stock kept for 8 generations under laboratory conditions. The gestation period averages 16 days. There are 6-7 young per litter. Sexual maturity is attained at 7-8 weeks.

20610. BURT, WILLIAM HENRY. A new rice rat (Oryzomys) from Sonora, Mexico. *Proc. Biol. Soc. Washington* 47: 107-108. 1934.—*O. couesi* **lambi** (p.107).

20611. CHAPPELLIER, A. Le rat musqué (Ondatra), biologie et lutte. *Ann. Epiphyties* 19(3): 143-184. 2 pl., 9 fig. 1933.—The text is taken from the pamphlet which appeared under the title *"La lutte contre le Rat musqué"* (No. 1 of the "Collection de Monographies," Inst. Agric. Research. 72pp., 4 pl., 25 fig., 1933). In the first part the biology of the muskrat is summarized. The animal is descr. and represented together with the other spp. with which it is sometimes confused (nutria, brown rat, water vole). The 2d part of the text is devoted to the fight against the muskrat: the different means employed are descr.; especially traps and the virus (*Bacillus typhi murium*). In conclusion, there is an analysis of the texts of French and foreign legislation controlling the fight against the muskrat.—*A. Chappellier* (*tr. by C. V. Green*).

20612. CHAWORTH-MUSTERS, J. L. A note on the nomenclature of two sciurids from eastern Siberia. *Ann. and Mag. Nat. Hist.* 13(77): 555-557. 1934.—The type locality of *Eutamias asiaticus uthensis* (Pallas) (=*Tamias orientalis* Bonhote) is shown to be the Uda R., NE. Siberia. *Spermophilus leucostictus* Brandt is removed from the syn. of *Citellus suslica*, and the name will stand as *Citellus eversmanni leucostictus* (Brandt) (=*C. buxtoni* J. A. Allen).—*F. H.*

20613. CHAWORTH-MUSTERS, J. L. A note on the nomenclature of Phodopus sungorus (Pallas) and its geographical races. *Ann. and Mag. Nat. Hist.* 13(78): 590-591. 1934.—A distr review of the 3 recognized races of *P. sungorus* (Pallas) (=*Mus songarus* Pallas).

P. s. **campbelli** (*Cricetulus c.* Thomas) (p.591); *P. s.* **crepidatus** (*P. c.* Holl.) (p.591).—*F. H.*

20614. CHAWORTH-MUSTERS, J. L. A note on the nomenclature of the species of the "subtilis" group of the genus Sicista. *Ann. and Mag. Nat. Hist.* 14(83): 554-556. 1934.—In this group, of E. Europe, Russian Turkestan, and W. Siberia, 6 forms are recognized: *S. subtilis subtilis* (Pallas); *S. s. loriger* (Nath.); *S. s. trizona* (Petenyi); *S. betulina betulina* (Pallas); *S. b. montana* Mehely; *S. b. norvegica* Chaworth-Musters.—*F. H.*

20615. CLARK, W. E. Le GROS. On the skull structure of Pronycticebus gaudryi. *Proc. Zool. Soc. London* 1934(1): 19-27. 3 fig. 1934.—This skull was compared with the recent and fossil primate material in the Brit. Mus. The author concludes that it is derived from a very early primate, definitely a member of the lemuriform group; that it is not a primitive tarsoid as stated by Stehlin and others who based their opinion on dental characteristics alone.—*E. M. MacEwen.*

20616. COCKERELL, T. D. A. South American Canidae. *Jour. Mammal.* 15(3): 243. 1934.—Proposes to divide American Caninae into 2 tribes: Canini Fischer (restricted), type *Canis* L., and **CHRYSOCYONINI**, type *Chrysocyon* H. Smith.

20617. COKER, ROBERTO E. La caza de lobos en el Perú. [Hunting seals in Peru.] *Bol. Comp. Admin. Guano* 9(8): 223-245. 4 fig. 1933.—Lima, Peru. Observations concerning the interrelations of sea-lions and guano-producing birds and the significance of sea-lions as producers of commercial guano. Sea-lion guano is small in quantity and low in quality. The supposition that sea-lions are seriously inimical to the guano-producing birds has no material foundation. The idea that sea-lions are significant and perhaps essential aids to fish-consuming birds by herding small fish to the surface is also found to be unsupported by such observations as could be made in course of a year. The general conclusion is that there was no occasion either for efforts to exterminate the sea-lions or for stringent protective measures. Some compiled information regarding sea-lion, whale, and porpoise fisheries is appended. This is a reprint of an article published in the Bol. Ministerio Fomento, Dirección de Fomento, 5(12): 64-95; 1907, Lima, Peru.—*R. E. Coker.*

20618. DAVIS, WILLIAM B. A study of the Idaho jumping mice of the genus Zapus, with remarks on a few specimens from British Columbia. *Jour. Mammal.* 15(3): 221-227. 1 fig. 1934.—Systematic review of 5 Idaho sspp. of *Z. princeps*, including *Z. p.* **idahoensis** (p.221). Tax. notes on *Z. p. saltator*, of Brit. Columbia.

20619. EISENTRAUT, M. Markierungsversuche bei Fledermäusen. *Zeitschr. Wiss. Biol. Abt. A, Zeitschr. Morph. u. Ökol. Tiere* 28(5): 553-560. 1 fig. 1934.—Tagging experiments were begun in 1932. Many bats caught in their winter sleep were tagged by an aluminum band around the distal end of the radio-ulna. A few were recovered in the summer 25-100 km. from the tagging place. In the winter many tagged bats returned not only to the same caves but even to the same part of the cave previously occupied. Bats transported during their winter sleep from caves A to B, both near Berlin (42 km. apart), returned the next winter to hibernate in A.—*L. H. Hyman.*

20620. FLEROV, CONSTANTINE C. A new Paleolithic reindeer from Siberia. *Jour. Mammal.* 15(3): 239-240. 1 pl. 1934.—*Rangifer* **constantini** (p.239), skull*, Solutrean.

20621. FRIANT, MADELEINE. Sur les affinités de l'Issiodoromys, Rongeur de l'Oligocène d'Europe. *Comptes Rend. Acad. Sci. [Paris]* 197(19): 1059-1061. 1 fig. 1933.—The Middle Oligocene European rodent *Issiodoromys* has been classed by authors with the Caviidae because of supposed similar structure of the teeth. Unworn molars of *Issiodoromys* have a peculiar structure of cross-crests quite unlike that of cavid molars, and approaching the molar structure of the Tertiary Theridomyidae. *Issiodoromys* is thus to be considered as an advanced theridomyid. In the Caviidae molar abrasion commences before birth, but this evidently was not the case in *Issiodoromys*. This genus cannot be used as evidence of a south Atlantic land bridge in Tertiary time.—*L. S. Russell.*

20622. GOODWIN, GEORGE G. Two new mammals from Kazakstan. *Amer. Mus. Novitates* 742. 1-2. 1934.—*Crocidura suaveolens* **mordeni** (p.1); *Microtus* **gravesi** (p.2).

20623. GOODWIN, GEORGE G. Mammals collected by A. W. Anthony in Guatemala, 1924-1928. *Bull. Amer. Mus. Nat. Hist.* 68(1): 1-60. 5 pl. 1934.—A report on 1000 mammals, including 74 spp. and sspp., providing a good representation of the mammalian fauna of central and southern Guatemala. The specimens represented are from such diverse regions as the lofty mountain ranges in western Guatemala; low coastal plains of the Pacific; hot, dry, arid regions and dense tropical forests of central Guatemala. Typical specimens of several spp. secured near some of Salvin's old stations are now made available for the first time in American collections. This bulletin covers descriptions, measurements, and field notes of the collection.—*G. G. Goodwin.*

20624. GRINNELL, JOSEPH. A new pocket gopher from Lassen County, California. *Proc. Biol. Soc. Washington* 47: 193-197. 1934.—*Thomomys bottae* **saxatilis** (p.193), with remarks on the sharp delimitation of the ranges of spp. of *Thomomys* by the factor of soil texture.

20625. GYLDENSTOLPE, NILS. A manual of Neotropical Sigmodont rodents. *K. Svenska Vetenskapsakad. Handl.* 11(3): 1-164. 18 pl. 1932.—A compilation based on the literature and on original observation of the type specimens and representative series of Neotropical Cricetidae at the museums of London, Copenhagen, and Stockholm. Approximately 60 genera are recognized, a few being signaled by the author as of dubious status. The paper will be found particularly useful to workers in the U. S. A. from the fact that the author has for the first time published good illustrations of the skulls of numerous species in the collections of the Brit. Mus. No pictures of Brit. Mus. types appear, however. Notes dealing with material in German museums are absent, as explained by the author in his preface. Tables of measurements of type specimens of most spp. are appended. On plate XVIII, by means of diagrams, the author illustrates his views on dental homologies in the S. Amer. cricetids.—*G. H. H. Tate.*

20626. HALL, E. RAYMOND. A new pika (mammalian genus Ochotona) from central Nevada. *Proc. Biol. Soc. Washington* 47: 103-105. 1934.—*O. princeps* **tutelata** (p.103).

20627. HALL, E. RAYMOND. Mammals collected by T. T. and E. B. McCabe in the Bowron Lake region of British Columbia. *Univ. California Publ. Zool.* 40(9): 363-386. 1 fig. 1934.—Systematics and geographic distr. of the 45 kinds of mammals collected. *Canis latrans* **incolatus** (p.369), Brit. Columbia to Alaska. The mammal fauna is characterized by the presence of a high percentage of Rocky Mountain forms, among which those from the southern part of the Rocky Mountains predominate.—*E. R. Hall.*

20628. HIBBARD, CLAUDE W. A new Bassariscus from the Lower Pliocene of Nebraska. *Kansas Univ. Sci. Bull.* 21(paper 7): 273-278. 1 pl. 1933.—*B.* **ogallalae*** (p.273), type locality Ogallala formation, part of lower jaw with dentition.

20629. HIBBARD, CLAUDE W. Antrozous bunkeri, a new bat from Kansas. *Jour. Mammal.* 15(3): 227-228. 1934.

20630. HILL, JOHN ERIC. External characters of newborn pocket gophers. *Jour. Mammal.* 15(3): 244-245. 1934.—*Thomomys bottae*, in California.

20631. JEPSEN, GLENN L. A revision of the American Apatemyidae and the description of a new genus, Sinclairella, from the White River Oligocene of South Dakota. *Proc. Amer. Phil. Soc.* 74(4): 287-305. 3 pl., 4 fig. 1934.—Apatemyidae, Plesiadapidae, and Chiromyidae have been regarded as synonymous family names for a group of American and European Paleocene and

Eocene mammals, and classified as insectivores and as primates. A reexamination of all Amer. specimens, aided by X-ray photographs furnishes criteria for the anatomic and geologic separation of one phyletic series, for which the name Apatemyidae Matthew is revived and redefined. Apatemyidae are classified as (?) Insectivora and include *Labidolemur kayi**, Bear Creek Paleocene, Montana, *L. soricoides*, Tiffany Paleocene, Colorado, *Teilhardella chardini**; Graybull Eocene, Wyoming, *Apatemys bellus**, *A. bellulus**, and *A. rodens*, Bridger Eocene, Wyoming, *Stehlinella uintensis**, Uinta Eocene, Wyoming, and **SINCLAIRELLA** (p.291), type *S.* **dakotensis*** (p.291), Chadron Formation, Oligocene, S. Dakota. *Uintasorex* Matthew and *Trogolemur* Matthew are removed from the Apatemyidae.—*G. L. Jepsen.*

20632. KURODA, NAGAMICHI. Korean mammals preserved in the collection of Marquis Yamashina. *Jour. Mammal.* 15(3): 229-239. 1934.—Tax. and distr. notes on 24 forms. Muridae: *Microtus pelliceus*, new to Korea; *Cricetulus triton nestor* Thomas (=*Asiocricetus bampensis* Kishida, *A. yamashinai* Kishida); *Mus bactrianus* **yamashinai** (p.234). Soricidae: *Crocidura dsinezumi* **quelpartis** (p.236), Quelpart I.; *C. lasiura* **thomasi** (*C. t.* Sowerby) (p.237); *C.* **yamashinai** (p.237); *C.* **neglecta** (p.238).—*F. H.*

20633. LÖNNBERG, EINAR. Prodelphinus graffmani n. sp., a new dolphin, from the Pacific coast of Mexico. *Arkiv Zool.* [*Stockholm*] 26 A(4, no. 19): 1-11. 1 pl., 1 fig. 1934.

20634. McATEE, W. L. Food habits of predatory mammals. *Jour. Mammal.* 15(3): 243-244. 1934.—Comparison of investigations by several authors in Russia and by Dearborn in Michigan. Of 9 predators in each country, at least 8 in Russia and 7 in Michigan have preponderantly beneficial food habits.

20635. MORALES AGACINO, E. Descripción de un nuevo soricido del género Crocidura Wagler, procedente de Rio de Oro. [A new Crocidura from Rio de Oro.] *Bol. Soc. Española Hist. Nat.* 34(1): 93-95. 1 fig. 1934.—*C.* **bolivari*** (p.93), key to 4 Moroccan forms of *Crocidura.*

20636. NELSON, E. W., and E. A. GOLDMAN. A new pocket mouse from Sonora. *Jour. Washington Acad. Sci.* 24(6): 267. 1934.—*Perognathus flavus* **sonoriensis,** Mexico.

20637. OEHSER, PAUL H. Another new generic name for a South American marsupial. *Jour. Mammal.* 15(3): 240. 1934.—**LESTOROS** (*Cryptolestes* Tate, preocc.).

20638. PARNELL, I. W. Some notes on the natural history of the Scottish red deer. *Proc. Roy. Phys. Soc.* [*Edinburgh*] 22(2): 75-80. 1932.—Notes on history, habitat, and biology. The average size is decreasing, owing to overstocking, to shooting of the finest stags, to absence of food and shelter, and to parasites.

20639. PASTORE, JOLE. Sui solchi cerebrali di un "Symphalangus syndactylus." *Atti R. Accad. Sci. Torino Cl. Sci. Fis. Mat. e Nat.* 68(11/15): 570-587. 3 pl. 1933.—It is concluded from a minute study of the cerebral sulci of a young *S. syndactylus* that their pattern may serve to distinguish the genus from *Hylobates.*—*From auth. summ.* (*tr.*).

20640. PETIT, G. Le genre "Lepidolemur" et sa répartition géographique. (Note préliminaire.) *Compt. Rend. Som. Séances Soc. Biogéogr.* 82. 33-37. 1933.—Recognizes in Madagascar an eastern sp., *L. mustelinus* I. Geoffroy, and a western sp., *L. ruficaudatus* A. Grand. The latter is divided into 3 sspp., including *L. r. dorsalis* Gray and *L. r. leucopus* Forsyth Major.—*F. H.*

20641. PETIT, G. Mammalia. In: Contribution à l'étude de la faune de Madagascar. III, ed. by G. PETIT. *Faune Colonies Franç.* 4(5): 559-589. 1934.—Systematic report on 16 forms, including lists of specimens and descr., tax., and life-history notes. Centetidae: *Echinops* Martin is considered a subg. of *Ericulus* Geoffroy; *Ericulus telfairi* **nigrescens** (p.570); *Limnogale mergulus* F. Major, emend. descr.—*F. H.*

20642. PRELL, H. Die gegenwärtig bekannten Arten der Gattung Chinchilla Bennett. *Zool. Anz.* 108(5/6): 97-104. 1934.—Discusses the taxonomic history of the genus. Three spp. are recognized: *C. chinchilla* (Licht.), Peru and Chile from lat. 9°-23° S., in the W. Andes; *C.* **velligera** (*C. lanigera* Bennett, preocc.) (p.100), Chile from lat. 25°-32° S., in coastal hills and inland valleys; and *C. boliviana* Brass, S. Bolivia and N. Argentina, in the E. Andes. Trade names of the various forms are supplied. Bibliography.—*F. H.*

20643. RUSCONI, CARLOS. Una nueva especie de comadreja fósil, "Didelphys seneti," n. sp. *Anales Soc. Cient. Argentina* 113(5): 213-215. 1 fig. 1932.—*D.* **seneti*** (p.213), mandible with teeth, Ensenada stage, Upper Pliocene, Argentina.

20644. ST. LEGER, J. On two "red duikers" from Mt. Elgon and Mt. Kenya, East Africa. *Ann. and Mag. Nat. Hist.* 14(81): 382-385. 1934.—*Cephalophus* **fosteri** (p.383), Mt. Elgon, 8000-11,300 ft., Uganda; *C.* **hooki** (p.384), Mt. Kenya, 8500-10,000 ft., Kenya.

20645. SANBORN, COLIN CAMPBELL. Neotropical bats in the Carnegie Museum. *Ann. Carnegie Mus.* 21(3): 171-183. 1932.—Distr. and tax. of 46 forms, chiefly from Costa Rica, Colombia, Bolivia, Venezuela, and Brazil. *Cormura brevirostris,* new to Costa Rica and Colombia; *Pteronotus suapurensis,* new to Costa Rica; *Xenoctenes hirsutus,* new to Colombia, redescr.; *Lonchorhina aurita,* new to Bolivia and Brazil; *Phyllostomus verrucosus,* new to Costa Rica; *Anoura geoffroyi,* new to Bolivia; *Enchisthenes harti,* new to Venezuela, redescr.—*F. H.*

20646. SCHLAIKJER, ERICH M. Contributions to the stratigraphy and palaeontology of the Goshen Hole Area, Wyoming. 1. A detailed study of the structure and relationships of a new zalambdodont insectivore from the middle Oligocene. *Bull. Mus. Comp. Zool.* 76(1): 1-27. 1 pl., 7 fig. 1933.—*Apternodus* **gregoryi*** (p.6), nearly complete skull and jaws. Solenodontidae, here claimed as n. subfam., but used by Gill (1872), is redefined and *Micropternodus* is assigned to it. Subfam. Apternodontinae is transferred from Tenrecidae to Solenodontidae. The relationships between *Apternodus* and other Zalambdodonta are discussed. *Arctoryctes* (Miocene) and *Necrolestes* are excluded from the suborder.—*E. P. G.*

20647. SCHWARZ, ERNST. Notes on the nomenclature and systematic position of some African mammals. *Ann. and Mag. Nat. Hist.* 14(80): 258-261. 1934.—*Simia porcaria* Brünnich is not applicable to the Chacma baboon, but is a syn. of *Macaca nemestrina* L.; *S. sphingiola* Hermann is indefinable; *Papio comatus* E. Geoffroy thus becomes available for the Chacma baboon; lectotypes are designated for *P. porcarius occidentalis* Goldblatt and *P. p. orientalis* Goldblatt, both of which are placed in syn. of *P. c. comatus* E. Geoffroy; *P. c. griseipes* Pocock (=[*Choiropithecus porcarius*] *transvaalensis* Zukowsky, [*Choiropithecus*] *rhodesiae* Haagner; *P. cynocephalus jubilaeus* Schwarz); *Civettictis civetta schwarzi* Cabrera, type locality restricted to Zanzibar; the author of *Hippopotamus capensis* proves to be Desmoulins, 1825.—*F. H.*

20648. SHELDON, CAROLYN. Studies on the life histories of Zapus and Napaeozapus in Nova Scotia. *Jour. Mammal.* 15(4): 290-300. 1934.—Studies of wild and captive *Z. h. hudsonius* and *N. i. insignis* in Nova Scotia. Observations include habitats, number of individuals in and location of colonies, runways and nests, breeding. Hibernation was studied in the laboratories in the Mus. Zool., Ann Arbor, Michigan. Hibernation was irregular apparently with no regard to temp. One *Zabus* hibernated in a room heated to 72° F.—*C. Sheldon.*

20649. STEKLIN, H. G. Bubalus iselini n. spec. aus dem obern Pliocaen von Val d'Arno. *Eclogae Geol. Helvetiae* 27(2): 409-412. 3 fig. 1934.—*B.* iselini (p.409), upper Pliocene, Italy.—*W. Berry.*

20650. STOCK, CHESTER. Skull and dentition of the American Miocene cat, Pseudaelurus. *Bull. Geol. Soc. America* 45(6): 1051-1058. 2 pl. 1934.—*P. intrepidus** Leidy, Esmerelda formation, Nevada, first descr. of skull and upper dentition.

20651. STRAUS, WILLIAM L. Jr., and GEORGE B. WISLOCKI. On certain similarities between sloths and slow lemurs. *Bull. Mus. Comp. Zool.* 74 (3) : 43-56. 1932. —It is obvious that the sloths and lorises exhibit marked similarities in certain morphological characters. These similarities are apparently correlated with functional similarities of the parts involved. They are by no means indicative of any close genetic relationship of the 2 groups, but may be regarded as adaptive convergences. The sloths are highly and peculiarly specialized members of the Xenarthra, while the slow lemurs occupy a similar position among the Lemuroidea. Both groups have secondarily become adapted to a sluggish mode of arboreal life, and to the maintenance of clinging postures. Therein seems to lie the answer to the convergent structural adaptations. These structural similarities, which we interpret as convergences, involve the presence in the extremities of a peculiar and highly specialized type of blood vascular distr. (the bundle form of rete mirabile) ; increase in relative length of the upper extremity; reduction of the tail; relative broadening of the chest; increase in number of presacral vertebrae and ribs; absence (except in *Loris tardigradus*) of an anticlinal vertebra; and blunting of thoraco-lumbar and lengthening of cervical spinous processes. Bibliography.—*Auth. concl.*

20652. SUTTON, GEORGE MIKSCH, and WILLIAM J. HAMILTON, Jr. A new Arctic weasel from Southampton Island, Hudson Bay. *Ann. Carnegie Mus.* 21 (2) : 79-81. 1932.—*Mustela arctica* **semplei** (p.79).

20653. TATE, G. H. H. An apparently new fruit bat of the Pteropus hypomelanus group from Gower Island, Solomon Islands. *Amer. Mus. Novitates* 718. 1-2. 1934.—*P.* **goweri** (p.1).

20654. TEILHARD de CHARDIN, P., and R. A. STIRTON. A correlation of some Miocene and Pliocene mammalian assemblages in North America and Asia, with a discussion of the Mio-Pliocene boundary. *Univ. California Publ. Bull. Dept. Geol. Sci.* 23. 227-290. 1934.—The North American, European, Chinese, and Indian mammalian faunas of the Miocene and Pliocene epochs are correlated. Special emphasis is placed on the geological range of the genera in China and N. Amer. A division of the Miocene and Pliocene is discussed, primarily on the vertebrate evidence. This places the Pontian in the lower Pliocene, and the first Pliohippus-Neohipparion faunas in N. Amer. are correlated with the Pontian.

20655. TEILHARD de CHARDIN, P., and C. C. YOUNG. Fossil mammals from the late Cenozoic of northern China. *Geol. Surv. China, Palaeont. Sinica* C 9 (1) : 1-88. Map, 10 pl., 23 fig. 1931.—Part I. A study of the rodents. There are brief descr. and stratigraphic notes. *Spermophilus* cf. *mongolicus**, Up. Pliocene and Lr. Pleistocene; *Tamias* sp., Pliocene; *Chalicomys* **broilii*** (p.4), and *Paralactaga* sp.* (p.8), Pontian; *Dipus* cf. *sowerbyi*, Yulin formation (Pleistocene); **PARARHIZOMYS** (p.11), type *P. hipparionum* (p.11), Pontian; *Prosiphneus* (= *Myotalpavus* Miller), *P. arlesianus** Schlosser, Pontian; *P.* **sinensis*** (p.14), Pontian; *P.* **intermedius*** (p.15), Pontian or Pliocene; *Siphneus* cf. *fontanieri** and *S.* cf. *cansus**, Pleistocene; *S.* **chanchenensis*** (p.20), Yulin formation; *S.* **minor*** (p.20), Pleistocene; *S. arvicolinus** Nehring, Pleistocene (Sanmenian); *S. tingi**, Sanmenian, an index fossil of this age; *S.* **chaoyatseni*** (p.24), and *S.* **asuchiapinensis*** (p.25), Sanmenian; *S.* **omegodon*** (p.26), Pliocene; *Lepus* sp.*, Pleistocene; *Caprolagus brachypus* Young, Sanmenian; **OCHOTONOIDES** (p.30) (Ochotonidae), erected for *O.* **complicidens** (*Ochotona c.* Boule and Teilhard) Sanmenian and Yulin formation; *Ochotona* cf. *daurica* (Pallas), Yulin formation. Part II. A study of the Lr. Pliocene Antilopidae. Descrs. of *Gazella* cf. *gaudryi** (Schlosser) ; *G.* **paotehensis*** (p.36) ; *G.* **blacki*** (p.38) ; **PACHYGAZELLA** (p.40), type *P.* **grangeri*** (p. 40) ; **ANTILOSPIRA** (p.43), type *A.* **licenti*** (p.43). Since Pontian time the *Gazella* group has been predominant in Central and Eastern Asia, forming an independent block separated from western Asian and African types. It shows, even at this early date, a tendency toward the *Procapra* type still living in Mongolia and China. *Pachygazella,* an aberrant form, suggests the existence, in Lr. Pliocene times, of a peculiar Asiatic stock, of which *Saiga* and *Pantholops* are possible survivors. Part III. Complementary observations on the fauna and the stratigraphy of some interesting localities. *Hipparion* **houfenense*** (p.49), Lr. Pliocene. There are brief notes on 18 forms associated with those described in parts I and II.—*E. P. G.*

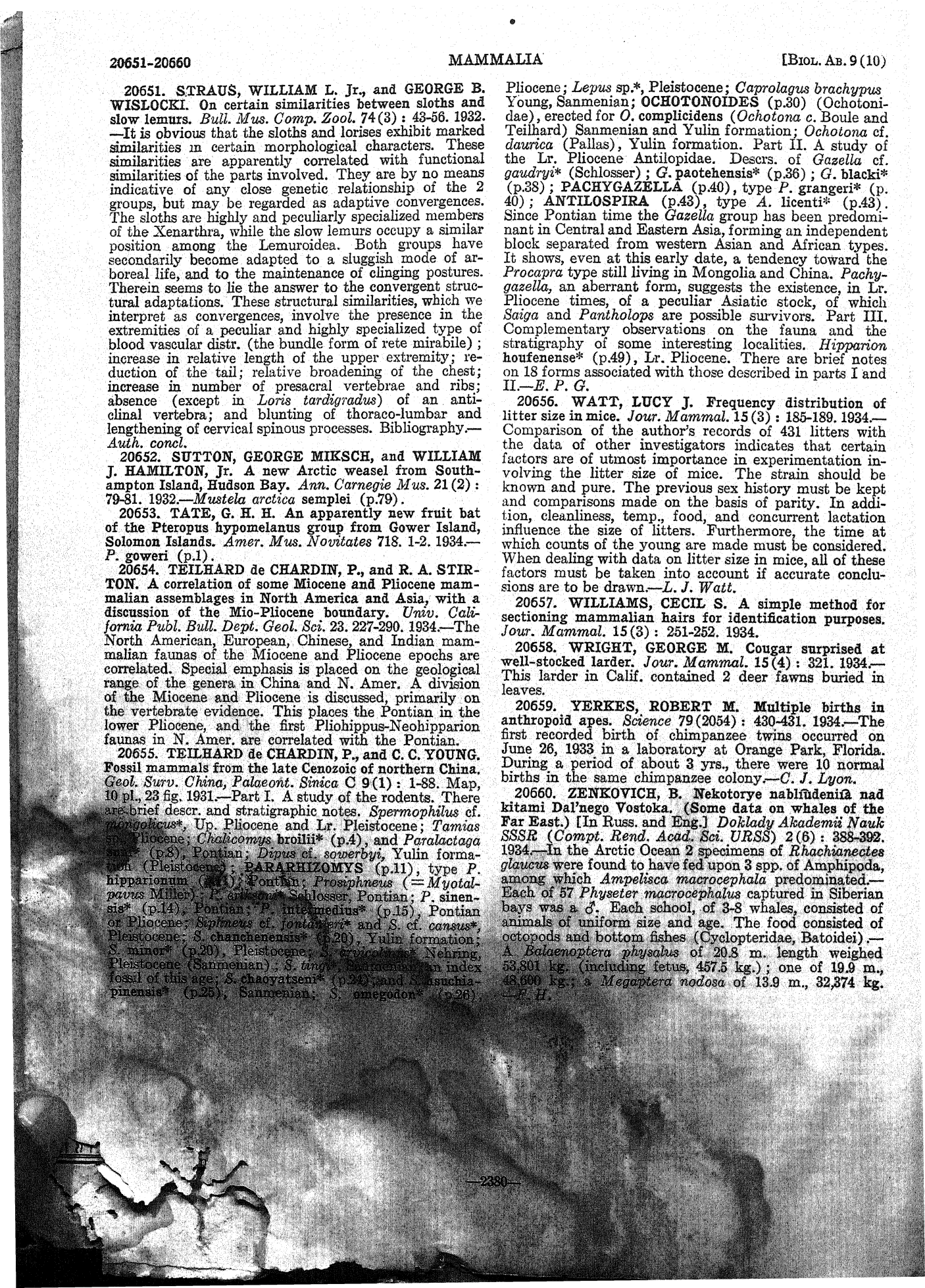
20656. WATT, LUCY J. Frequency distribution of litter size in mice. *Jour. Mammal.* 15 (3) : 185-189. 1934.—Comparison of the author's records of 431 litters with the data of other investigators indicates that certain factors are of utmost importance in experimentation involving the litter size of mice. The strain should be known and pure. The previous sex history must be kept and comparisons made on the basis of parity. In addition, cleanliness, temp., food, and concurrent lactation influence the size of litters. Furthermore, the time at which counts of the young are made must be considered. When dealing with data on litter size in mice, all of these factors must be taken into account if accurate conclusions are to be drawn.—*L. J. Watt.*

20657. WILLIAMS, CECIL S. A simple method for sectioning mammalian hairs for identification purposes. *Jour. Mammal.* 15 (3) : 251-252. 1934.

20658. WRIGHT, GEORGE M. Cougar surprised at well-stocked larder. *Jour. Mammal.* 15 (4) : 321. 1934.—This larder in Calif. contained 2 deer fawns buried in leaves.

20659. YERKES, ROBERT M. Multiple births in anthropoid apes. *Science* 79 (2054) : 430-431. 1934.—The first recorded birth of chimpanzee twins occurred on June 26, 1933 in a laboratory at Orange Park, Florida. During a period of about 3 yrs., there were 10 normal births in the same chimpanzee colony.—*C. J. Lyon.*

20660. ZENKOVICH, B. Nekotorye nablîudeniîa nad kitami Dal'nego Vostoka. (Some data on whales of the Far East.) [In Russ. and Eng.] *Doklady Akademii Nauk SSSR (Compt. Rend. Acad. Sci. URSS)* 2 (6) : 388-392. 1934.—In the Arctic Ocean 2 specimens of *Rhachianectes glaucus* were found to have fed upon 3 spp. of Amphipoda, among which *Ampelisca macrocephala* predominated.—Each of 57 *Physeter macrocephalus* captured in Siberian bays was a ♂. Each school, of 3-8 whales, consisted of animals of uniform size and age. The food consisted of octopods and bottom fishes (Cyclopteridae, Batoidei).—A *Balaenoptera physalus* of 20.8 m. length weighed 53,801 kg. (including fetus, 457.5 kg.) ; one of 19.9 m., 48,600 kg.; a *Megaptera nodosa* of 13.9 m., 32,374 kg. —*E. H.*



INTRODUCTORY GUIDE TO THE INDEXES

Users of Biological Abstracts are reminded that this volume covers only a part of the literature published in the period during which the volume was issued. Succeeding volumes must therefore also be consulted for literature more or less contemporaneous with that reported and indexed in this volume.

SUBJECT AND SYSTEMATIC INDEXES

GENERAL

These indexes are designed to meet the needs both of those whose interests lie chiefly in systematic groups of organisms and of those whose interests are not circumscribed in this way. For the former, chiefly systematic biologists, one of the requisite avenues of approach to their subject is by systematic groups; this is provided by the systematic index. Experience has shown that the needs of those concerned with other biological disciplines are most practically met by a detailed analytical subject index alphabetically arranged; an extensive index of this type is therefore provided.

A special effort has been made to design these two indexes as far as possible in such a way that they will complement rather than duplicate each other. Certain departures from standard indexes will therefore be noted. Chief among these is the policy in the systematic index to carry the indexing only to genera, not to species; the detailed indexing of species, including new ones, occurs under genera in the subject index only. This decision is prompted by the fact that an increasing number of investigators have frequent occasion to locate information concerning species of plants or animals without necessarily knowing their precise systematic position in the classification used.

This arrangement will be convenient for systematists as well, especially when seeking information concerning a limited number of given genera; under these circumstances the subject index will be found the more satisfactory, making consultation of the systematic index in such cases unnecessary. When, however, more comprehensive and extended systematic orientation is desired, the systematic index provides a complete condensed approach by groups and their subgroups down to and including genera.

THE SUBJECT INDEX

(p. 2489 to end)

This index is based upon an analysis of the abstract, not merely the title.

The words, terms, and expressions currently used for the same or closely related subjects vary greatly. If the indexing is done according to the particular words used by authors, much scattering of material concerning the same subject obviously results. Therefore the effort has been to index subjects and not merely words, and, where necessary, provide cross references which will lead the user from words commonly used to the rubrics under which the pertinent material has been assembled. Thus, studies on blood sugar are indexed under that rubric, not under "Hypoglycemia," "Hyperglycemia," or other terms used by authors to denote variations in blood sugar; because of their frequent use, however, "Hypoglycemia," "Hyperglycemia," etc., are entered in their respective alphabetic positions with cross references to "Blood sugar." Similarly, word indexing frequently scatters material referring to the same species; thus, material concerning the domestic fowl would appear under such diverse rubrics as hen, cock, pullet, capon, fowl, chicken, chick, etc.

While an effort has been made through subject indexing to avoid in a large measure the scattering resulting from word indexing, the index is, in the main, not a classified one. Since ease of use rather than strict logic is demanded of an index, the indexing so far as possible is done under the rubrics under which it is thought the majority of users are most likely to search. To this extent the index is frankly opportunistic. Thus the index contains rubrics for "Antibodies," "Antigens," "Complement," "Toxins," "Vaccines," etc., instead of relegating all to subordinate positions under some general rubric, *e.g.*, "Immunity." Since individual researches tend to be highly specialized, this general policy is believed to result usually in greater convenience to investigators.

This policy necessarily places closely related subjects in more or less widely separated alphabetical positions, and since the index should be useful not only to the specialist but also to those who wish a more comprehensive orientation in a wider field, cross references have been liberally employed to lead users to related material. Also, when the nature of the material has made it possible, the information has not only been entered under, for instance, the specific name of the substance, but has been listed again under the class or group to which it belongs. For example, the papers which deal with cyanides as insecticides appear with detailed entries under "Cyanides," as: "Cyanides, as insecticides, in wireworm control, ... 14089," and are listed again, by number only, under "Insecticides," as: "Insecticides, cyanides as, ... 9202, 14098." Similarly, papers on specific stains are entered in detail under the name of the stain, *e.g.*, "methylene blue," etc., and listed again by number only under "Stains." Cyanides and methylene blue cannot, however, be made exclusively subrubrics of "Insecticides" and "Stains," respectively, because of their importance in other directions.

There are some cases, however, in which there seems to be no necessity for thus scattering related material, especially in cases where there is an anatomical basis for grouping, material has been entered only under the larger group heading. Thus the bones, muscles, nerves, and the various parts of the brain are listed under "Bone," "Muscle," "Nerve," "Brain," rather than under "Ulna," "Sartorius," "Phrenic," "Amygdala," "Restiform body," etc.

Under very broad rubrics only those papers are in general indexed which themselves are broad in content or point of view. Thus, under "Physiology," "Pathology," "Cytology," "Horticulture," "Ecology," etc., will usually be found indexed only books or other general treatments; to do otherwise would make these headings unwieldy and more or less coextensive with the corresponding abstract sections.

Indexing under names of organisms

In general, indexing is done under the scientific name used in the original; *i.e.*, no attempt is made to select the name that might be considered correct under the rules where two or more names are in current use. This results in some scattering of references pertaining to the

same organism, notably among bacteria, where several systems of nomenclature are current. However, specialists will know what names to consult in such cases; also, a limited amount of cross referencing is provided.

When common names only are used in the original, the indexing as a rule is done under these; allocation to genera would in many cases be difficult and introduce errors. Thus, if merely "clover" appears in the original, it is indexed under that name rather than under the genus *Trifolium,* since the plant in question may belong to some other of the several genera members of which are known as "Clovers." Where, however, there is no room for doubt as to the proper scientific name of an organism or group mentioned only by common name in the original, indexing may be done under the scientific name. Between common names and their possible, probable, or certain corresponding generic names, cross references have been provided in a limited number of cases.

Since the same generic name is sometimes used for both plants and animals, the alphabetical arrangement used in the subject index throws these together. In most cases these have been separated. Occasionally, however, the species listed under a generic name will be in part animal and in part plant; reference to the corresponding abstracts at once distinguishes between them.

Studies, especially experimental, on common laboratory animals (guinea pig, mouse, rat, rabbit, dog, cat, etc.) are in general not indexed under the name of the animal; the same applies to man, especially in the fields of physiology, pathology, and anatomy.

In view of the extensive systematic index, the indexing in the subject index is usually not done under group names above the rank of genus. Occasionally it appears desirable to insert references under larger group names, often in anglicized form, *e.g.,* "Diatoms," "Fishes," etc. However, every supergeneric group recognized and represented in the systematic index appears in the subject index in Roman type; the page number following refers to the page of the systematic index on which the group is treated, and the exponential figure attached to the page number refers to the column.

Similarly, the page and column references appearing after generic names refer to the exact places in the systematic index where these genera are treated systematically. *It is thus possible to determine instantly the classification of any genus occurring in the alphabetical subject index which appears also in the systematic index.* For example, the genus *Anopheles* in the alphabetic subject index is followed by "(p. 2445 ^{4})"; reference to this page and column in the systematic index discloses that the genus falls in the family Culicidae, order Diptera, class Insecta.

Through the policies outlined in the two paragraphs preceding it is apparent that *the subject index provides at the same time a complete alphabetical index to the systematic index.* It is thus possible for users of the alphabetical subject index to orient themselves systematically as to both genera and supergeneric groups, thereby facilitating the utilization of systematic information—especially by those who find it difficult to do so when only a systematic approach is available. Furthermore, the user is at once put in touch with related genera and groups and the information recorded concerning them, thereby simplifying the problem of approaching a special problem against a background of broad orientation.

Typography

All generic names are in *italic type* (the only exceptions are new genera and subgenera, which appear in bold-faced capitals); all other first words in rubrics are in ordinary Roman type. This will be found convenient: if the search is for a generic name, all roman type rubrics can be ignored; if the search is for any other subject rubric, all italic names can be passed by automatically.

New genera and subgenera are printed in bold-faced capitals, *e.g.,* **APODICRANIA.** Categories below the rank of genus are not indexed in first position, the sole exception being new subgenera.

New species, varieties, etc., appear in lower-case bold-faced type, *e.g., Anopheles* **demeilloni,** *Carex sempervirens* v. **bulgarica.**

New specific, varietal, etc., names proposed to replace preoccupied names are printed in lower-case bold-faced type, with the replaced combination following in parentheses and in italic; *e.g., Asphragis* **dubiosa** (*A. aciculata*). If the preoccupation is the result of transferring a species from one genus to another, thus involving two generic names, the replaced binomial is also entered in first position, in italic, followed in parentheses by the new binomial (the new name appearing in lower-case boldface); *e.g., Canthocamptus crassus* (*Attheyella* **ekmani**).

In *new combinations* (*e.g.,* transfers of members from one genus to another), the specific name appears in lower-case bold-faced type, followed in parentheses and in italic by the genus from which the member is transferred; *e.g., Brillia* **par** (*Orthocladius*). The old combination is also entered in first position, but wholly in italic, followed in parentheses and in italic by the genus to which the transfer is made: *Orthocladius par* (*Brillia*). If in making the transfer any change in specific, varietal, etc., names is made, the full combinations are given.

In the abstracts *new synonyms* are preceded by an equality sign and placed in parentheses; the name under which the synonym is sunk precedes, *e.g., Coragyps a. atratus* (Bech.) (=*Cathartes foetens* Licht.).

A dagger (†) associated with a plant or animal name indicates that it is a *fossil.* The abbreviations in parentheses signify *geological periods,* as follows:

(Cb)	= Carboniferous	(N)	= Neogene
(Cm)	= Cambrian	(O)	= Ordovician
(D)	= Devonian	(Pl)	= Pleistocene
(E)	= Eogene	(Pr)	= Permian
(J)	= Jurassic	(S)	= Silurian
(K)	= Cretaceous	(Tr)	= Triassic

Some necessary variations from the above will be self-explanatory.

In the abstracts an asterisk (*) attached to a name indicates that the form is illustrated.

THE SYSTEMATIC INDEX

(pp. 2385-2466)

The indexing in the systematic index is limited to those disciplines in which the interest is more or less strongly by systematic groups, notably the taxonomic and morphological. Aside from the strictly taxonomic, which will be discussed in more detail below, the indexing is confined at present to the following subjects, the references being grouped correspondingly under the abbreviations given in parentheses:

Morphology, including anatomy (MORPH.)
Histology (HIST.)
Cytology (CYT.)
Embryology (EMB.)
Life history (L. H.)
Phylogeny (PHYL.)
Geographical distribution (DIST.)
Bibliography (BIBL.)

In indexing specific and subspecific taxonomic entities proposed as new to science, all categories are provided for, of which the more common are the following:

New species (N. SP.)
New subspecies (N. SSP.)
New varieties (N. VAR.)
New forms (N. F.)
New aberrations (N. AB.)

If entities of two or more kinds (*e.g.,* new species and new varieties) are proposed in the same paper, the paper is entered only under the superior category (N. SP.).

Superspecific entities (subgenera, genera, and higher groups) proposed as new to science are listed by name

in bold-faced capitals, *e.g.*, **CHILOCYSTIS.** New genera appear in alphabetic order among the other genera of the particular group; new subgenera are indented under the corresponding genera; in new supergeneric groups the exact position of the names varies somewhat, depending upon the rank of the group and whether the name is merely indexed or whether utilized by the editor for arranging subordinate groups under it. All new superspecific group names, except genera, are accompanied by a statement of the rank assigned to them by the authors, *e.g.*, n. subg., n. ord., etc.

In new transfers of members from one genus to another (*new combinations*),[1] an index entry is provided, under the genus to which the transfer is made, in the category **N. COMB.**; an entry is also provided under the genus from which the transfer is made—usually the genus in which the transferred member was originally placed—in the category "synonymy" **(SYN.)**.

New names proposed to replace preoccupied ones are referred to under the genus in the category **N. N.**

New synonymy,[1] *i.e.*, the proposal to unite two or more generic, specific, or subspecific concepts previously considered distinct, is referred to, under the genus or genera involved, in the category **SYN.**

Taxonomic information other than that discussed above, *e.g.*, keys, revisions, synopses, emended descriptions, etc., is entered in the category "taxonomy" **(TAX.)**; this is not done, however, for genera to which the same abstract reference has already been made in one of the above categories, *e.g.*, **N. SP., N. VAR., N. COMB.**

Certain *fossil genera* of very doubtful position, or form genera of broad scope, are omitted from the systematic index; they are, however, included in the subject index.

Geographical distribution **(DIST.)** is in general entered in the systematic index only when treated more or less comprehensively or when data of apparently peculiar interest are presented. Some variation in this policy will be noted. Geographical distribution is, however, indexed fully by groups under geographical and political units in the Geographical Index (see below). This, it is believed, will be found useful because the interest in much recorded distributional information is local. However, by consulting the Geographical Index the student desiring more exhaustive information regarding distribution will be able to assemble easily the desired references.

Papers treating a group (family, order, etc.) more or less comprehensively from some point of view (morphology, taxonomy, cytology, etc.) are frequently indexed under the broader group, though they may also be entered under individual genera. However, new species, new varieties, new combinations, etc., are invariably referred to under the genera.

Genera are arranged alphabetically under groups, and are therefore easily located. If, on the other hand, the systematic index is consulted for subjects—cytology, embryology, life history, etc.,—the distinctive type used for the abbreviations renders the assembling of references from this point of view almost equally simple.

The *systems of classification* used in the various groups are determined by the editors in charge of the respective sections. In general the policy is to use conservative modern classifications; also, to omit intermediate groups, especially subfamilies (a few large families in Lepidoptera being the only exceptions). Since the purpose of the systems here used is chiefly to facilitate the location of desired information, it is believed that the omission of these taxonomic refinements will contribute to, rather than detract from, the utility of the index; furthermore, these refinements are more likely to be fluctuating and controversial, involving changes in successive volumes confusing to the user of the indexes.

GEOGRAPHICAL AND GEOLOGICAL INDEXES

THE GEOGRAPHICAL INDEX

(pp. 2467-2485)

This index is devoted to the indexing of geographical information, particularly the geographical distribution of organisms.

The various geographical areas adopted as units for indexing purposes are grouped under the following major headings: North America, South America, Europe, Africa, Asia, Malay Archipelago, Australasia, Antarctica, Oceanic Islands, and Oceans. The arrangement of the areas under each of these major headings is alphabetical except in the case of North America, where the countries are arranged in a general north-to-south sequence. The subdivisions of any country, such as the provinces of Canada or the separate states of the United States, are arranged alphabetically under that country.

Under each geographical area or unit, organisms are listed by group names arranged alphabetically and corresponding approximately to the systematic sections of current abstract issues; *e.g.*, "Coleoptera," "Fungi," "Mammalia," etc. Items of information pertaining to geographical distribution, but not readily classifiable by systematic groups, are entered in the index above the systematic group names.

A limited amount of indexing is done under the larger geographical units (*e.g.*, West Indies; Europe; Africa, northern), either because the papers in question treat the area more or less comprehensively or because the locality data are not sufficiently specific in the original to permit of more circumscribed allocation.

The names of all geographical areas or units adopted for indexing purposes are printed in their proper places in this index. A few, however, are followed by no abstract numbers; this indicates that the current volume contains no material for indexing under those names.

For indexing purposes, it is a general policy to include coastal islands with near-by mainland countries rather than with oceanic island groups. Likewise coastal waters, up to the 100-fathom line, are generally included with the adjoining mainland. Oceans include adjoining gulfs, bays, and smaller seas. For the most part, only aquatic organisms are indexed under oceans. For abstracts dealing with organisms of a certain kind of distribution, such as coastal fishes (Pisces) or pelagic birds (Aves), references may be given both under an ocean and under a land area.

A dagger (†) preceding an abstract number indicates that the abstract deals with a fossil organism or organisms. Various letter symbols in parentheses signify *geological periods*, as follows:

(Cb)	= Carboniferous	(N)	= Neogene
(Cm)	= Cambrian	(O)	= Ordovician
(D)	= Devonian	(Pl)	= Pleistocene
(E)	= Eogene	(Pr)	= Permian
(J)	= Jurassic	(S)	= Silurian
(K)	= Cretaceous	(Tr)	= Triassic

Additional information on the distribution of organisms, as far as it pertains to the geologic occurrence

[1] It is the policy to list new combinations in the abstracts provided (1) they are labeled as new (done usually only in plant taxonomy) or (2) text statements make it clear that they are proposed as new. The same policy in general applies to new synonyms, where specific labeling of new synonyms is very rarely done by workers in either kingdom. This policy obviously results in very incomplete recording and indexing of new combinations and new synonyms; however, it results in indexing those which authors record with sufficient clearness.

of fossil species, is indexed in the Geological Index under the names of the geological periods, on pages 2487-2488.

Abstract numbers in bold-faced type indicate that new taxonomic concepts (e.g., new species or subspecies) are proposed in the papers referred to.

THE GEOLOGICAL INDEX TO PALEONTOLOGICAL MATERIAL
(pp. 2487-2488)

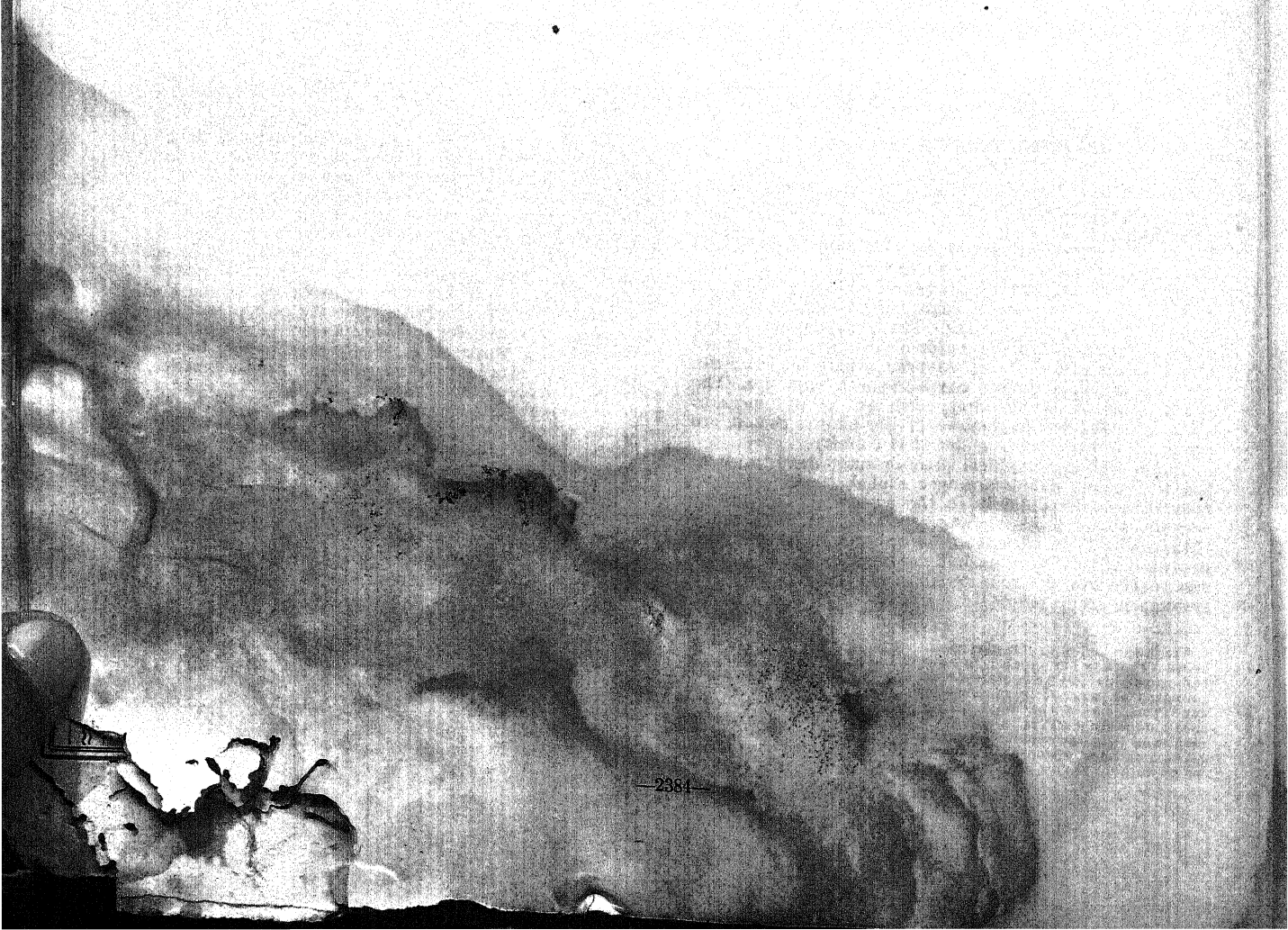
This index is devoted to the indexing of paleontological information on the basis of the geological time scale. The sequence progresses from older to younger strata by eras and periods. Under each period organisms are listed by group names arranged alphabetically and corresponding approximately to the systematic sections of current abstract issues, *e.g.*, "Crustacea," "Gymnospermae," "Mammalia," etc.; the only important exception is represented by "Insecta," the orders of which are not separated. For a detailed systematic approach to paleontological material the Systematic Index (pp. 2385-2466) should be consulted.

A limited amount of indexing is done under the eras, either because the papers in question are more or less comprehensive or because the geological data are not sufficiently specific in the original to permit of allocation to periods.

In general, geographical locations are not included; for a geographical approach to paleontological material, the Geographical Index (pp. 2467-2485) should be consulted.

For an alphabetical approach to fossil forms, the Subject Index (p. 2489 to end) should be consulted.

Abstract numbers in bold-faced type indicate that new taxonomic concepts (e.g., species or subspecies) are proposed in the papers referred to.



SYSTEMATIC INDEX

(For introductory guide see pages 2381-2383)

PLANT KINGDOM

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ALGAE

TAX., 14545, 16685; MORPH., 16685; CYT., 16685, 19515; L. H., 16685; DIST., 1477, 12280

(Classification according to Engler and Prantl, "Die Natürlichen Pflanzenfamilien" 2nd ed., supplemented where yet incomplete by the 1st ed., and by Pascher, "Susswasserflora Deutschlands, u. s. w.," and other sources.)

MYXOPHYCEAE

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Dermocarpa, N. SP., 16687
Hyella, SYN., 16687; L. H., 14543
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Amblystegium, N. SP., 14574; DIST., 14574
Leptodictyum, N. VAR., 19568

BRACHYTHECIACEAE
Brachythecium, N.SP., 1514, 1517
Bryhnia, N. SP., 1517; N. SECT., 1517; N. COMB., 10060
Cirriphyllum, N. SP., 14574
Eriodon, N. SP., 1516
Eurhynchium, N. SP., 1517; CYT., 1528; L. H., 1528
Homalothecium, DIST., 1517
Rhynchostegiella, N. SP., 1516, 1517, 7897, 19568
Rhynchostegium, N. SP., 1517

ENTODONTACEAE
Entodon, N. SP., 19566; CYT., 1528; L. H., 1528
Pterigynandrum, N. COMB., 10060

PLAGIOTHECIACEAE
Plagiothecium, L. H., CYT., 1528

SEMATOPHYLLACEAE
Acanthocladium, N. SP., 14574; N. VAR., 1525
Aptychopsis, N. SP., 7896
Clastobryum, N. COMB., 1518
Glossadelphus, N. SP., 1514; N. COMB., 1515
Heterophyllium, N. SP., 1525
Rhaphidorrhynchium, N. SP., 1514
Sematophyllum, N. VAR., 1525
Taxithelium, N. SP., 1514
Trichosteleum, N. SP., 1514; N. VAR., 1525

HYPNACEAE
Ectropothecium, N. SP., 14574
Giraldiella, N. F., 12316
Hypnum, N. SP., 12316; SYN., 10060; CYT., 1528; L. H., 1528
Isopterygium, N. SP., 14574
Microthamnium, N. SP., 1525
Stereodon, SYN., 1518
Taxiphyllum, N. SP., 12316
Vesicularia, N. SP., 1525, 14574

RHYTIDIACEAE
Gollania, N. SP., 1525, 14574
Okamuraea, N. SP., 1517
RIGODIOPSIS, 1517; N. SP., 1517

DIPHYSCIACEAE
Diphyscium, MORPH., 7893

POLYTRICHACEAE
MORPH., 1526
Oligotrichum, N. SP., 19568
Pogonatum, N. VAR., 12316
Polytrichum, N. F., 3615; DIST., 12313

PTERIDOPHYTA

DIST., 3626, 5823, 19651, 19656

FILICALES

OPHIOGLOSSACEAE

Botrychium, L. H., 10069; DIST., 3624

Ophioglossum, N.SP., 7979; DIST., 3631

MARATTIACEAE

MORPH., 12389

Angiopteris, N.SP., 1534; MORPH., 3715

Caulopteris, HIST., (K) 19677

HYMENOPHYLLACEAE

Hymenophyllum, N. SP., 1534, 5752, 7979; SYN., 1532

Trichomanes, N. SP., 1529, 1532; N. VAR., 1534, 7979; N. N., 5752; TAX., 10068; MORPH., 1529

CYATHEACEAE

Alsophila, N. VAR., 1534; N. COMB., 3623; SYN., 5752; MORPH., 3715

Dicksonia, SYN., (†) 1606

Hemitelia, N. SP., 5752

Protopteris, HIST., (K) 19677

Rhizodendron, HIST., (K) 19677

Thyrsopteris, SYN., (†) 1606

POLYPODIACEAE

TAX., 1531; LEPISORIEAE, N. TRIBE, 1531

Acrophorus, N. SP., 5752

Acrostichum, SYN., 3684, 12320

Adiantum, N. SP., 7979; N. VAR., 1534; SYN., 3624; MORPH., 3715; DIST., 3625

Aspidium, SYN., 1534, 3623, 3624, 5752, 7899, 12320; MORPH., 3715; CYT., 25; DIST., 10133

Asplenium, N. SP., 1534, 7904; N. COMB., 12320, 19581; TAX., 19569; L. H., 3631; DIST., 13154

Athyrium, CYT., 55

Blechnum, N. SP., 1534, 5752, 7979; CYT., 55

Bolbitis, N. COMB., 12320

Campium, N. SP., 1534; N. COMB., 3684

Cheilanthes, N. N., 5752; MORPH., 3631

Cheilanthopsis, N. COMB., 1530

Cheiropleuria, TAX., 7901; MORPH., 7901

Clathropteris, DIST., (Tr) 1595

Cyclopeltis, N. SP., 1534

Davallia, SYN., 3624; MORPH., 3715; CYT., 55

Diellia, TAX., 10071

Diplazium, N. SP., 1534

Dipteris, N. SP., 1534

Doryopteris, MORPH., 3715

Dryopteris, N. SP., 1533, 1534, 5752, 7903; N.COMB., 3624, 3715, 7899, 7905, 10133, 12320

Elaphoglossum, N. SP., 7979; N. VAR., 5752

Gymnogramme, L. H., 7905

Gymnopteris, SYN., 12320

Hypolepis, N. SP., 1534

Lemmaphyllum, N. SP., 1531

LEPISORUS, 1531; N. SP., 1531; N. SECT., 1531

Leptochilus, N. SP., 7903

Leptostegia, TAX., 7900

Lindsaea, SYN., 3624

Lindsaya, N. SP., 1534, 5752

Lomagramma, N. COMB., 7899

Lomariopsis, N. SP., 12320

Neocheiropteris, N. COMB., 1531

Nephrodium, N. SP., 7979; SYN., 3623, 3624

Neurodium, SYN., 1531

Notholaena, SYN., 5752

Notogramma, CYT., 55

Odontosoria, SYN., 3624

Oleandra, N. COMB., 7899

Onychium, N. SP., 7900

Pellaea, MORPH., 12379; DIST., 3631

Phorolobus, SYN., 7900

Phymatodes, N. COMB., 3624

Platycerium, MORPH., 3715

Plesopeltis, SYN., 1531

Polypodium, N. SP., 1534, 5752, 7979; N. VAR., 19657; SYN., 1531, 3623, 3624, 7899, 12320; MORPH., 3630, 3715; CYT. 7902; L. H., 7902

Polystichum, N. VAR., 3686; CYT., 55

POMATAPHYTUM, 1576; N. SP., 1576

Pteris, N. SP., 1534; SYN., 7899; CYT., 55

Pyrrhosia, N. COMB., 12320

Sagenia, SYN., 3623

Scleroglossum, N. COMB., 5752

Stenochlaena, SYN., 12320

Stenoloma, N. COMB., 3624

Taeniopsis, SYN., 5752

Taenitis, N. VAR., 1534

Tectaria, N. SP., 1534; N. COMB., 3623, 5752, 12320

Woodsia, N. SP., 1530, 19586; MORPH., 3715; DIST., 3631

PARKERIACEAE

Ceratopteris, L. H., 7905

MATONIACEAE

Knowltonella, DIST., (K) 5857

Laccopteris, N. SSP., (Mes) 8001

GLEICHENIACEAE

Gleicheniopsis, N. SP., (K) 3727

SCHIZAEACEAE

MORPH., 3627

Anemia, MORPH., 3627

Lygodium, DIST., 3631

OSMUNDACEAE

Cladophlebis, N. SP., (J) 1606 (Mes) 8001

Osmunda, N. COMB., 3686

Todea, CYT., 13013

MARSILEACEAE

Marsilea, N. SP., 1569; MORPH., 14639; CYT., 26

Pilularia, MORPH., 26, 3628

SALVINIACEAE

Azolla, L. H., 4516

Salvinia, MORPH., 7987; CYT., 26, 55

INCERTAE SEDIS

(In Filicales)

Belonopteris, N. SP., (Pr) 8008

Isiolopteris, N. SP., (Pr) 19681

Neuropteridium, DIST., (Tr) 1595

Pecopteris, N. SP., (Pr) 19681

Polypodites, N. SP., (Mes) 8001

SYNIA, (†) 19681; N. SP., (Pr) 19681

INCERTAE SEDIS

(In Equisetales)

Phyllotheca, DIST., (Pr) 1595

Schizoneura, DIST., (Pr-Tr) 1595

ARTHROPHYTA

SPHENOPHYLLALES

INCERTAE SEDIS

(In Sphenophyllales)

CLIMACIOPHYTON, (†) 1620; N. SP., (D) 1620

CALAMARIALES

INCERTAE SEDIS

(In Calamariales)

PARACALAMITES, (†) 8008; N. SP., (Pr) 8008

Paracalamitina, N. SP., (Pr) 19681

EQUISETALES

EQUISETACEAE

Equisetum, N.VAR., 1574, 19657; CYT., 26, 38, 13013; L. H., 12322

LEPIDOPHYTA

LEPIDODENDRALES

LEPIDODENDRACEAE

Lepidodendron, MORPH., (†) 5859

Lepidostrobus, N.SP., (D) 14653; TAX., (†) 19666; SYN., (†) 5859

BOTHRODENDRACEAE

Bothrodendron, HIST., (†) 5859

SIGILLARIACEAE

Sigillariostrobus, TAX., (†) 19666

INCERTAE SEDIS

(In Lepidodendrales)

Stigmaria, MORPH., (†) 10166; PHYL., (†) 10166

LYCOPODIALES

LYCOPODIACEAE

Lycopodium, N. SP., 5752; SYN., 3624, 12321; MORPH., 12366, 14660; DIST., 10070

SELAGINELLACEAE

Selaginella, N. SP., 1535, 5752, 12321; N. COMB., 3624; MORPH., 10166; HIST., 3700; CYT., 26, 55

ISOETALES

ISOETACEAE

Isoetes, N. SP., 12323; MORPH., 3705; CYT., 26, 55; L. H., 3629

INCERTAE SEDIS

(In Lepidophyta)

CARAGANDITES, (†) 1607; N. SP., (Cb) 1607

Leptophloeum, SYN., (†) 19680

PSILOPHYTA

PSILOPHYTALES

Arthrostigma, TAX., (D) 3726, (†) 5861

BLASARIA, (†) 19680; N. COMB., (D) 19680

Psilophyton, TAX., (D) 3726; TAX., (†) 5861

SPERMATOPHYTA

TAX., 7906, 19571; MORPH., 7995; PHYL., 7906; (E) DIST., 1604

GYMNOSPERMAE

TAX., 16731; MORPH., 14625; PHYL., 7986, 14625, 13573; DIST., 5823, 19651

PTERIDOSPERMOPHYTA

(CYCADOFILICALES)

MORPH., (†) 12385; PHYL., (†) 12385

Alethopteris, SYN., (†) 8007

ANGAROPTERIDIUM, n. n. for *Neurogangamopteris*, (†) (Pr) 8008; N. SP., (Pr) 8008

Callipteris, N. SP., (Pr) 19681

Cardiopteris, N. SP., (Cb, Pr) 8008

COMPSOPTERIS, (†) 19681; N. SP., (Pr) 19681

Glossopteris, DIST., (Pr) 1603, (Pr) 8000

Megalopteris, N. SP., (Cb) 10160

Neurogangamopteris, *Angaropteridium*, n. n. for, (Pr) 8008

Neuropteris, N. SP., (Cb) 14666; N. F., (Cb) 8007; SYN., (†) 8008; MORPH., (Cb) 3720

Odontopteris, SYN., (†) 19681; DIST., (Pr) 1595

PEREBORITES, (†) 19681; N. SP., (Pr) 19681

Rhodea, DIST., (Cb) 16812

Sphenopteris, N. SP., (Mes) 8001, (Pr) 8008; (J) 14665; N. COMB., (†) 1606; SYN., (†) 19681

Supaia, TAX., (†) 19681

Taeniopteris, N. SP., (Mes) 8001

CYCADOPHYTA

BENNETTITALES

BENNETTITANTHUS, (†) 5864; N. SP., (J) 5864

Otozamites, N. SP., (J) 5864

Wielandiella, N. SP., (Mes) 8001

CYCADALES

MORPH., 7986; PHYL., 7986

CYCADACEAE

Bowenia, CYT., 6516

Ceratozamia, CYT., 6516

Cycadocarpidium, N. SP., (Mes) 8001

Cycas, CYT., 6516

Dioon, CYT., 6516

Encephalartos, CYT., 6516

Macrozamia, CYT., 6516

Microcycas, CYT., 6516

Stangeria, CYT., 6516

Zamia, CYT., 6516

INCERTAE SEDIS

(In Cycadophyta)

Ctenidiopsis, N. SP., (Mes) 8001

Ctenidium, N. SP., (Mes) 8001

Ctenis, N. SP., (Mes) 8001

Ctenophyllum, N. SP., (Mes) 8001

Cycadites, SYN., (†) 8002

Scytophyllum, N. COMB., (Pr) 8002

Zamites, N. SP., (Mes) 8001

CONIFEROPHYTA

CORDAITALES

Callixylon, N. SP., (Cb) 5856

Cordaites, N. SP., (Cb) 19667, (Pr) 19681; DIST., (Pr) 1595

Dadoxylon, N. SP., (Cb) 5863

Noeggerathiopsis, N. SP., (Pr) 1599, (Pr) 19681; DIST., (†) 8000

GINKGOALES

GINKGOACEAE

Baiera, N. SP., (J) 1606, (Mes) 8001

Ginkgo, MORPH., 359; CYT., 13013

INCERTAE SEDIS

(In Ginkgoales)

Dicranophyllum, N. SP., (Pr) 19681

Ginkgoites, N. SP., (J) 1606; DIST., (†) 19681

Ginkgophyllum, DIST., (†) 19681

Rhipidopsis, N. SP., (Pr) 19681

CONIFERALES
TAX., 14581; MORPH., 7986, 14626; HIST., 10151; PHYL., 7986, 14626; DIST., 14582

TAXACEAE
DIST., 4522
Amentotaxus, TAX., 10133
Austrotaxus, MORPH., 5849; EMB., 5849
Cephalotaxopsis, N. SP., (Mes) 8001
Cephalotaxus, N. F., 3686
Cryptomeria, N. VAR., 3686
Nageiopsis, N. SP., (Mes) 8001
Podocarpus, N. SP., 19579; TAX., 19569; L. H., 4520; PHYL., 19573
Taxus, MORPH., 3704

PINACEAE
HIST., (N) 5862
Abies, N. SP., 7909; N. F., 19576; N. COMB., 7907; L. H., 10142; DIST., 2385
Abietipites, SYN., (Ter) 10165
Actinostrobus, TAX., 5849
Araucaria, MORPH., 12330; HIST., 12330
Araucarioxylon, DIST., (J) 1601
Callitris, TAX., 5849; DIST., 3549
Chamaecyparis, N. VAR., 3686; HIST., 12354
Cupressinoxylon, N. SP., (E) 3731; TAX., (†) 19671
Cupressus, DIST., 3549, 19487
Diselma, MORPH., 16791
Fitzroya, MORPH., 3699; PHYL., 3699
Juniperus, N. SP., 7908; MORPH., 14626; PHYL., 14626; DIST., (Pl) 1593, 3549
Larix, TAX., 16734; MORPH., 5656; HIST., 10149; L. H., 4524
Picea, TAX., 5684; MORPH., 5669, 16792; HIST., 10149; L. H., 10142; DIST., 8838, 8850, 10920
Piceoxylon, TAX., (†) 19671
Pinus, N. SP., (E) 3731; TAX., 5684, 12236, 12244; MORPH., 336, 1580, 1583, 5697, 6637; CYT., 18, 1583; HIST., 1432, 3563, 10150, 12347, 12364, 12382, 14493; L. H., 4524, 10142, 10881; DIST., 1444, (Pl) 1593, 8838, 8850, 12228, 16621, 16622, 16645, 19574
Pityophyllum, N. SP., (J) 1606
Protodammara, N.SP., (K) 14664
Pseudolarix, TAX., 3712; MORPH., 3712; PHYL., 3712
Pseudotsuga, TAX., 12236; HIST., 10149
Sciadopitys, DIST., (N) 1601
Sequoia, TAX., (E) 3731; HIST., 10135
Taxodioxylon, DIST., (Ter) 1601
Tsuga, DIST., (†) 10165
Widdringtonia, TAX., 5849; EMB., 5849

INCERTAE SEDIS
(In Coniferales)
Brachyphyllum, N. SP., (K) 14664
Elatocladus, N. SP., (J) 1606
Ernestina, Ernestiodendron n. n. for, 10163
ERNESTIODENDRON, n. n. for *Ernestina,* (†) 10163
Pityoxylon, SYN., (†) 3731
Xenoxylon, N. SP., (J) 3728

GNETALES
MORPH., 14626; PHYL., 14626, 16733, 19573

GNETACEAE
Ephedra, N. SP., 10129, 19577, 19578; TAX., 1458, 16734; MORPH., 10156, 14626; HIST., 1458, 16663; PHYL., 14626
Gnetum, N. SP., 19575; MORPH., 14626; PHYL., 14626
Welwitschia, MORPH., 14626; PHYL., 14626

INCERTAE SEDIS
(In Coniferophyta)
Sciadopitytes, N. SP., (Mes) 8001
Ussuriocladus, N. SP., (Mes) 8001

INCERTAE SEDIS

(In Gymnospermae)
Acophyllum, DIST., (†) 19681
Conites, N. SP., (J) 1606
Dicroidium, N. COMB., (Pr) 19681
Glottophyllum, N. SP., (Pr) 19681
Nephropsis, N. SP., (Pr) 19681
Nilssonia, N. SP., (J) 1606, (Mes) 8001
Petcheria, N. SP., (Pr) 19681
Podozamites, N. SP., (Mes) 8001
PSYGMOCARPUS, (†) 19679; N. SP., (Cb) 19679
PSYGMOCLADUS, (†) 19679; N. SP., (Cb) 19679
PSYGMOSTROBOPHYLLUM, (†) 19679; N. SP., (Cb) 19679
PSYGMOSTROBUS, (†) 19679; N. SP., (Cb) 19679
Schützia, MORPH., (Pal) 14655

CAYTONIALES

MORPH., 12385, 12387; PHYL., 12385

ANGIOSPERMAE

MORPH., 12387, 14626; HIST., 14647; CYT., 28; PHYL., 12387, 14626, 14647, 16733, 19573; DIST., 9504, 15415, 19651

MONOCOTYLEDONES

TAX., 14594, 16731; MORPH., 10154, 12378; HIST., 10154; CYT., 54; PHYL., 14594; DIST., 5823; **CALYCIFERAE, COROLLIFERAE, GLUMIFLORAE,** N. DIVISIONS, 14594

PANDANALES
PANDANACEAE
TAX., 14595
Freycinetia, N. SP., 10082
Pandanus, N. SP., 5752, 7934, 7979, 10082, 14595

NAJADALES (HELOBIAE)
POTAMOGETONACEAE
Cymodocea, DIST., 1542
Diplanthera, N. SP., 1542
Potamogeton, MORPH., 14627; PHYL., 14627
Zostera, N. SP., 1542, 1546; DIST., 1474

NAJADACEAE
Najas, CYT., 17609

JUNCAGINACEAE
Scheuchzeria, DIST., 13150
Triglochin, N. SP., 7915

ALISMATACEAE
Echinodorus, EMB., 5841
Sagittaria, EMB., 5841

BUTOMACEAE
Butomus, MORPH., 12390
Limnocharis, MORPH., 12390

HYDROCHARITACEAE
ENHALEAE, N. TRIBE, 14594
Ottelia, N. SP., 1569

GRAMINALES (GLUMIFLORAE)
POACEAE (GRAMINEAE)
TAX., 3632, 19656; MORPH., 183, 7981; HIST., 3716; PHYL., 3716; *Andropogoneae,* CYT., 30; **ANOMOCHLOEAE, STREPTOCHAETEAE,** and **THYSANOLAENEAE,** N. TRIBES, 14594; *Bambusae,* HIST., CYT., 3714; **CHIKUSICHLOEAE,** N. SUBTRIBE, 3632
Achneria, N. SP., 7979
ACROCHAETE, 7979; N. SP., 7979
Aegilops, N. VAR., 19657; HIST., 10159; CYT., 4420, 12999, 13002
Aegopogon, SYN., 1541
Aeluropus, N. SP., 19657
Agropyrum, N. SP., 1544, 10078, 19657; N. VAR., 3632; TAX., 17649; MORPH., 3716; HIST., 3716
Agrostis, N. SP., 7979; N. VAR., 15423; N.F., 7930; N.SECT., 3632; TAX., 1544; SYN., 1573, 3632
Aira, SYN., 3632
Amphicarpon, MORPH., 14644
ANATHERUM, 19657; N. SP., 19657
Andropogon, N. SP., 7979, 10085; N. VAR., 19657; N. COMB., 1541; SYN., 15423, 16741; MORPH., 13169; L. H., 4525
Anthephora, N. SP., 7931
Anthoxanthum, N. SP., 7979; N. SECT., 3632
Aristida, N. SP., 7910; N. SSP., 10129; N. COMB., 1541, 7930; MORPH., 7981, 12332
Arthraxon, N. SP., 16741; N. COMB., 3632
Arundinaria, N. SP., 3686; SYN., 3685
Arundinella, N. SP., 3632
Asperella, N. VAR., 1544
Asprella, SYN., 3632
Atropis, SYN., 3632
Aulacolepis, N. SP., 19603
Avena, N. SP., 19657; N. VAR., 15423; CYT., 2229, 4396, 17605
Avenastrum, N. SP., 7979
Axonopus, N. SP., 1549, 7979
Bambusa, SYN., 3686; HIST., 12347
Berriochloa, TAX., (†) 14657
Bouteloua, N. COMB., 1541; MORPH., 7981; HIST., 12332; L. H., 10911
Brachiaria, N. SP., 14593
Brachyachne, N. SP., 14593
Bromus, N. SP., 10080; N. VAR., 19657; N. COMB., 1541, 7930; TAX., 19581
Calamagrostis, N. SP., 3632; SYN., 19657; MORPH., 13063; EMB., 13063
EUCALAMAGROSTIS, N. SUBG., 3632
PARAGROSTIS, N. SUBG., 3632
Calamovilfa, MORPH., 3716; HIST., 3716
Cenchrus, N. SP., 10078
Cephalostachyum, N. SP., 10073
Chaetochloa, SYN., 3632
CHEVALIERELLA, 7923; N. SP., 7923
Coelachne, N. SP., 7979
Coelachyrum, N. SP., 5755
Coix, N. COMB., 3632
Cymbopogon, N. SP., 10073; N. VAR., 3632
Dactylis, MORPH., 12363
Danthonia, N. SP., 7924
Danthoniopsis, N. SP., 14592
Dendrocalamus, N. SP., 7922
Deschampsia, N.SP., 3632, 19661; N. VAR., 1544; MORPH., 12363
Diarina, SYN., 7926
Diarrhena, N. COMB., 7926
Digitaria, N. SP., 1541, 7979; N. COMB., 5752
Dimeria, N. SP., 16741; N. VAR., 3632
Diplachne, N. COMB., 3632
Eatonia, SYN., 1541
Echinochloa, N. COMB., 3632
Echinolaena, N. SP., 1549
Ehrharta, N. SP., 14593
Eleusine, N. SP., 7979
Elionurus, N. SP., 14593
Elymus, N. SP., 3632; N. F., 3681; N. COMB., 1541
Epicampes, SYN., 1541
Eragrostis, N. SP., 1541, 7979; SYN., 16749; DIST., 3681
EREMOCHLAMYS, 7979; N. SP., 7979
Eriachne, N. SP., 7910
Erianthus, SYN., 3632
Erioblastus, TAX., 3632
Eriochloa, N. COMB., 1541
Euchlaena, CYT., 17, 6503
Festuca, N. SP., 1544, 1545, 1574, 3632, 5767; N. COMB., 7927; SYN., 7930; CYT., 13010, 13032; DIST., 7927, 13032
STENOFESTUCA, N. SUBG., 3632
Fluminea, N. COMB., 3632
Garnotia, N. SP., 5752
Gilgiochloa, N. SP., 7979
Hakonechloa, N. VAR., 3686
Harpachne, N. VAR., 7979
Helopus, SYN., 1541
Hemarthria, N. SP., 19604
Hilaria, MORPH., 7981, 12332
Holcus, N. VAR., 19581
Hordeum, N. SP., 1544; N. VAR., 1541, 19657; N. F., 15423; HIST., 10136; CYT., 33, 12999, 17609
Hystrix, N. COMB., 3632
Isachne, N. SP., 5756, 19604; N. SECTS., 3632; SYN., 3632
Ischaemum, N. SP., 3632, 16741; N. VAR., 1573
Koeleria, N. SP., 19657
Korycarpus, TAX., 7926
Lagurus, N. VAR., 5832
Leersia, N. VAR., 3632
Leptochloa, N. SP., 7979
Lepturus, N. VAR., 3632
Lolium, CYT., 13032; DIST., 13032
LOXOSTACHYS, 7979; N. SP., 7979
Manisuris, N. SP., 16741; N. COMB., 19603
Melica, N. SECT., 3632; SYN., 1541, 3632
Mesosetum, N. COMB., 1549
Microchloa, SYN., 14593
Microstegium, N.SP., 3632, 5761; N. SECTS., 3632
Milium, SYN., 1541
Miscanthus, N. SP., 3632; N. VAR., 1574; N. SECT., 3632
Molinia, SYN., 3632
Monium, N. SP., 1543
Monostachya, DIST., 3690
Muhlenbergia, N.SP., 19603; N.N., 1541
NEOMOLINIA, 3632; N. COMB., 3632
Oplismenus, N. SP., 3632
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PARACHROMAGASTER, 20030; **N. SP.**, 20030, 20031, 20033; **SYN.**, 20041
Trigonolaimus, **N. SP.**, 20030; **SYN.**, 20031, 20041

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Aegialoalaimus, **N. SP.**, 20031, 20033
Aphanolaimus, **N. SP.**, 17126
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Camacolaimus, **N. SP.**, 20030, 20032, 20033; **SYN.**, 20031, 20041
Dermatolaimus, **DIST.**, 20033
LINOLAIMUS, 20034; **N. SP.**, 20034

COMESOMIDAE
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Sabatieria, **N. SP.**, 20040; **TAX.**, 20041; **DIST.**, 20033

MONHYSTERIDAE
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Cobbia, **N. SP.**, 20030; **DIST.**, 20033
EUMORPHOLAIMUS, 20040; **N. SP.**, 20040
GREENIA, 20035; **N. SP.**, 20035
LATILAIMUS, 20033; **N. SP.**, 20033
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Steineria Stek. and Con., **TAX.**, 20034
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Metalinhomoeus, **N. VAR.**, 20030
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PANDOLAIMUS, 20030; **N.SP.**, 20030; **DIST.**, 20033
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Cothonolaimus, **N. SP.**, 20033, 20040; **SYN.**, 20041
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Anoplostoma, **N. SP.**, 20032; **SYN.**, 8260
CACOLAIMUS, 20037; **N. SP.**, 20037; **SYN.**, 20034
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ROTATORIA

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Proales, N. **SP.**, 12597
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Lepadella, N. **SP.**, 8278
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TESTUDINELLIDAE
Testudinella, N. **VAR.**, 8277

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FLOSCULARIIDAE
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BDELLOIDA
PHILODINIDAE
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ANNELIDA

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POLYCHAETA

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NEPHTHYDIDAE
Nephthys, N. **SP.**, 12601, 17137; **DIST.**, 3978

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SYLLIDAE
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Autolytus, N. **SP.**, 3978, 8291; **TAX.**, 10352
Odontosyllis, **TAX.**, 10352; **SYN.**, 17136; **L. H.**, 17136
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Perinereis, N.SP., 12606; **MORPH.**, 1816
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Platynereis, N. **SP.**, 12606; **TAX.**, 10352
PRONEREITES, (†) 12607; N. **SP.**, (O) 12607
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Iphitime, N. **SP.**, 12603
Lysidice, **TAX.**, 3978, 17137; **DIST.**, 8283
Marphysa, N. **SP.**, 3978, 17136, 20052; **TAX.**, 17137; **MORPH.**, 17134
Nauphanta, **TAX.**, 17137
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ONUPHIDIDAE
Diopatra, **TAX.**, 17137; **L. H.**, 20045
HYALINAECITES, (†) 12607; N. **SP.**, (O) 12607
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Onuphis, N. **SP.**, 12604; **TAX.**, 17137

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Lumbrinereis, N. **SP.**, 12604; **TAX.**, 3978, 17137; **DIST.**, 8283
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NAIDIDAE
Aulophorus, L. H., 4490
Chaetogaster, L. H., 4536
Pristina, N. SP., 20054; L. H., 4490

TUBIFICIDAE
Branchiura, DIST., 8286
Limnodrilus, N. SP., 1815; SYN., 10353
Peloscolex, N. SP., 20053

LUMBRICULIDAE
Lumbriculus, EMB., 1745
Stylodrilus, DIST., 8289

ENCHYTRAEIDAE
Mesenchytraeus, DIST., 6121
Pachydrilus, N. SP., 1813

BRANCHIOBDELLIDAE
Branchiobdella, TAX., 17106
Cambarincola, N. SP., 20056
Ceratodrilus, N. SP., 3987
Cirrodrilus, SYN., 3987
Pterodrilus, SYN., 3987

MONILIGASTRIDAE
Desmogaster, N. SP., 10354
Drawida, N. SP., 10354, 17138; HIST., 17053

MEGASCOLECIDAE
Benhamia, SYN., 10356
Buttneriodrilus, N. SP., 3981
Dichogaster, N. SP., 10356; DIST., 3981
Eutyphoeus, MORPH., 3984, 6114; L. H., 20045
Gardullaria, N. SP., 3981
Gordiodrilus, N. VAR., 3981
Lampito, MORPH., 6114
Pheretima, N. SP., 1818, 10353, 10354, 17138, 20047, 20053; MORPH., 6114, 6115; CYT., 6534; L. H., 20045; PHYL., 10354
PLANAPHERETIMA, N. SUBG., 10354
POLYPHERETIMA, N. SUBG., 10354
Polytoreutus, N. SP., 10356
Teleudrilus, N. SP., 3981
Woodwardiella, MORPH., 6114

GLOSSOSCOLECIDAE
Alma, MORPH., 1809
Drilocrius, HIST., 4490; L. H., 4490
Glossoscolex, N. SP., 3976
Microchaetus, N. SP., 3981
Pontoscolex, DIST., 10353

LUMBRICIDAE
Allolobophora, N. SP., 20046; TAX., 12602; DIST., 12602
Dendrobaena, TAX., 12602, 20046; DIST., 12602
Eisenia, N. VAR., 20046; TAX., 12602; MORPH., 6116; DIST., 12602
Helodrilus, MORPH., 3885, 6035; EMB., 3885
Lumbricus, TAX., 6117; MORPH., 4933
Octolasium, N. SP., 12602; TAX., 20046

HIRUDINEA

TAX., 3983; MORPH., 3983, 6033; HIST., 3983, 19828; CYT., 3983; L. H., 3983; PHYL., 3983, 6033; DIST., 3983

ICHTHYOBDELLIDAE
Branchellion, TAX., 3980
Carcinobdella, N. SP., 20050; MORPH., 20049
CYRILLOBDELLA, 3980; N. SP., 3980
Piscicola, TAX., 3980
Pontobdella, TAX., 1820

GLOSSIPHONIDAE
Glossiphonia, N. SP., 1810, 1814
IDRISOBDELLA, 3980; N. SP., 3980
OLIGOCLEPSIS, 20051; N.SP., 20051
Placobdella, N. SP., 10355; TAX., 3980

HERPOBDELLIDAE
Herpobdella, TAX., 17106; HIST., 17142

HIRUDIDAE
DIST., 17135
Desmobdella, TAX., 10355
Haemopis, HIST., 8287; L. H., 6118
Hirudo, MORPH., 10349; HIST., 17142; CYT., 2245
Limnatis, TAX., 3980
Myxobdella, TAX., 10355
Semiscolex, TAX., 10355

ECHIURIDA

TAX., 8284; MORPH., 8284; EMB., 8284; L. H., 8284; DIST., 8284, 15440

ECHIURIDAE
Bonellia, EMB., 17044
Echiurus, DIST., 3971
Urechis, CYT., 15281

INCERTAE SEDIS

(In Annelida)
Hyolithellus, N. SP., (Cm) 19686
RUSHTONIA, (†) 19686; N. SP., (Cm) 19686
Torellella, N. SP., (Cm) 19686

BRACHIOPODA · BRYOZOA · PHORONIDEA

BRACHIOPODA

(Classification according to Schuchert and LeVene, "Classification of Brachiopod Genera, Fossil and Recent." (1929).)
MORPH., (Pal) 10361, (†) 10368

PALEOTREMATA
KUTORGINIDAE
Kutorgina, N. SP., (Cm) 19686

ATREMATA
OBOLIDAE
Lingulella, N. SP., (Cm) 5872, (O) 19685
Obolus, N. SP., (Cm) 5872

LINGULIDAE
Lingula, SYN., (†) 8292
TRIGONOGLOSSA, (†) 8292; N. SP., (Cb) 8292

NEOTREMATA
DISCINIDAE
Orbiculoidea, N. SP., (O) 8888

CRANIIDAE
ANGAREELLA, (†) 6123; N. SP., (S) 6123
Philhedra, N. SP., (D) 5867, (D) 19687

PROTREMATA
MORPH., (†) 10365; **PLECTORTHIDAE**, N. FAM., (†) 6124

BILLINGSELLIDAE
Billingsella, N. SP., (Cm) 5872

EOORTHIDAE
Eoorthis, N. SP., (Cm) 5872

FINKELNBURGIIDAE
Finkelnburgia, N. SP., (Cm) 5872

PLECTORTHIDAE
Hebertella, N. COMB., (O) 6124
DOLEROIDES, N. SUBG., (†) 6124
MIMELLA, (†) 6124; N. COMB., (O) 6124
Platystrophia, N. SP., (O) 10364
Schizophorella, TAX., (†) 6124

ORTHIDAE
GLOSSORTHIS, (†) 10364; N. SP., (O) 10364
Nicolella, N. SP., (O) 10364
Orthis, N. SP., (O) 10364, (O) 19685; SYN., (O) 6124, (†) 8292

DINORTHIDAE
Palaeostrophomena, TAX., (†) 10364, (†) 10365
Plaesiomys, MORPH., (†) 10365

CLITAMBONITIDAE
Clitambonites, N.SP., (O) 12401; N. SSP., (O) 10364; MORPH., (†) 10365
VELLAMO, N. SUBG., (†) 10364
Gonambonites, N.SP., (O) 10364; SYN., (†) 10365
INGRIA, (†) 10364; N. SP., (O) 10365; N. COMB., (O) 10364
KULLERVO, (†) 10365; N. COMB., (O) 10365
Orthisina, SYN., (†) 8292, (†) 10364, (†) 10365
Plectella, TAX., (O) 10365
RAUNA, (†) 10365; N. COMB., (O) 10365

DALMANELLIDAE
Dalmanella, N. SP., (S) 3988, (O) 10364

WATTSELLIDAE
MENDACELLA, (†) 6124; N. COMB., (†) 6124

RHIPIDOMELLIDAE
Rhipidomella, N. VAR., (D) 14670

SCHIZOPHORIIDAE
Enteletes, N. SP., (Cb) 8740
Parenteletes, DIST., (Cb) 12400
Pionodema, N. SP., (O) 6124
Schizophoria, N. SP., (Cb) 8292; DIST., (Cb) 3740, (Cb) 12400

HUENELLIDAE
Huenella, N. SP., (Cm) 5872

PENTAMERIDAE
CAMAROPHORINA, (†) 10362; N. COMB., (†) 10362
Camerophoria, N. SP., (Pr) 14896; SYN., (†) 10362
NEOGYPIDULA, (†) 10362; N. COMB., (Pr) 10362
Pentamerella, TAX., (D) 6126
Pentamerus, SYN., 10362
SALONIA, (†) 10358; N. SP., (O) 10358

STROPHOMENIDAE
Plectambonitidae, TAX., (†) 10365; **PLECTELLINAE**, N. SUBFAM., (†) 10364; **SOWERBYELLINAE**, N. SUBFAM., (†) 10364
AHTIELLA, (†) 10365; N. SP., (O) 10365
Derbyia, N. SP., 8292
DERBYOIDES, (†) 8292; N. SP., (Cb) 8292
Leptaena, N. SP., (O) 10364; TAX., (D) 19687
Leptelloidea, N. SP., (O) 10364
Leptestia, N. SP., (O) 10364
LEPTOPTILUM, N. SUBG., (†) 10364

Meekella, N. VAR., (Cb) 8292
Orthotetina, N. SP., (Cb) 8292
Plectambonites, SYN., (†) 10364
PSEUDODERBYIA, (†) 10362; N. SP., (Pr) 10362
Rafinesquina, N. SP., (O) 10364, (O) 12392; MORPH., (†) 10365
Schuchertella, N. COMB., (Cb) 8292; TAX., (D) 6126, (D) 19687
Sowerbyella, N. SP., (O) 10364, (O) 12392
Stropheodonta, N.SP., (S) 19698; TAX., (D) 6126
Strophomena, N. SP., (S) 12392
ACTINOMENA, N. SUBG., (†) 10364
Triplesia, N. SP., (O) 10364
UKOA, (†) 10365; N. SP., (O) 10365

CHONETIDAE
Chonetella, N. SP., (Cb) 12400
Chonetes, N. VAR., (Cb) 8292, (Cb) 12400, (D) 14670; TAX., (D) 6126, (D) 19687; SYN., (†) 8292
Chonetina, N. SP., (Cb) 8292, (Cb) 12400
LISSOCHONETES, (†) 8292; N. VAR., (Cb) 8292
MESOLOBUS, (†) 8292; N.SP., (Cb) 14898; N. VAR., (Cb) 8292
Tornquistia, TAX., (†) 8292

PRODUCTIDAE
TAX., (†) 8292
AIRTONIA, (†) 10359; N. SP., (Cb) 10359
Aulosteges, N. SP., (Pr-Cb) 1614; SYN., (†) 8292
Avonia, N. SP., (Cb) 12400
Cancrinella, N. COMB., (Cb) 8292
Dictyoclostus, N. SP., (Cb) 8292
Echinoconchus, N. SP., (Cb) 8292
Juresania, N. SP., (Cb) 8292
Krotovia, N. SP., (Cb) 8292
Leptalosia, N. SP., (Cb) 8292; TAX., (D) 6126
LEPTOLOSIA, (†) 8292; N. COMB., (Cb) 8292
Linoproductus, N. SP., (Cb) 8292
Marginifera, N. SP., (Cb) 8292
Productus, N. SP., (Cb) 3746, (Pr-Cb) 3989, (Cb 3991, (Cb) 5871; SYN., (†) 8292, (†) 14896; DIST., (Cb) 3899
Ruthenia, N. VAR., (Pr) 14896
Sowerbina, N. SP., (Pr) 14896
Strophalosia, SYN., (†) 8292

OLDHAMINIDAE
Keyserlingina, N. SP., (Cb) 6128, 6129
Poikilosakos, N. SP., (Cb) 6128, 6129; TAX., (†) 8292

TELOTREMATA

CAMAROTOECHIIDAE
Camarotoechia, N. SP., (Cb) 3746, (S) 14894
Hypothyridina, DIST., (D) 14899
Pugnoides, N. SP., (Cb) 3746
Uncinulus, N. SP., (D) 19687
WELLERELLA, (†) 8292; N. SP., (Cb) 8292

RHYNCHONELLIDAE
BARZELLINIA, (†) 1611; N. SP., (Tr) 1611
Capillirhynchia, N.SP., (J) 10360
Flabellirhynchia, N. SP., (J) 10360
Globirhynchia, N. SP., (J) 10360
Gnathorhynchia, N. SP., (J) 10360
Kallirhynchia, N. SP., (J) 10360; TAX., (†) 10363; MORPH., (†) 10363
OLIGORHYNCHIA, (†) 14895; N. SP., (O) 14895
PTILORHYNCHIA, (†) 10360; N. SP., (J) 10360
Rhactorhynchia, N. SP., (J) 10360
Rhynchonella, N. SP., (Tr) 1611, 6130; TAX., (D) 19687; SYN., (†) 8292

DIMERELLIDAE
Rhynchonellina, N. F., (Tr) 1611

SPIRIFERIDAE
DIST., (†) 8990
Ambocoelia, N. SP., (Cb) 8292
Choristites, N. SP., (Cb) 3990
DARVASIA, (†) 10362; N. SP., (Pr) 10362
Munella, N. SP., (Cb) 3990
NEOPHRICADOTHYRIS, (†) 10362; N. COMB., (Cb and Pr) 10362
Neospirifer, N. SP., (Cb) 8292
Quadrifarius, N. VAR., (D) 3738
Reticularia, TAX., (D) 6126
Spirifer, N. SP., (Pr-Cb) 1614, (Cb) 3746, (Cb) 8292; TAX., (D) 6126, (†) 10362, (D) 19687; PHYL., (†) 6127
PAECKELMANELLA, N. SUBG., (†) 10362
Squamularia, SYN., (†) 10362

SPIRIFERINIDAE
Cyrtina, N. SP., (Tr) 19693; N. VAR., (D) 19687
Spiriferina, N. SP., (J) 14897

MERISTELLIDAE
Meristella, TAX., (D) 19687
Nucleospira, N. SP., (D) 19687

RHYNCHOSPIRINIDAE
Hustedia, N. SP., (Cb) 12490

ATHYRIDAE
Athyris, TAX., (D) 6126, (D) 19687
Composita, N. SP., (Cb) 8292, (Cb) 12400, (Pr) 14896

KONINCKINIDAE
Amphiclina, N. SP., (Tr) 6130

MEGANTERIDAE
Cryptacanthia, N. SP., (Cb) 8292, (Pr) 12396
Cryptonella, N. MUT., (D) 19687
Meganteris, TAX., (D) 19687
PSEUDOHARTTINA, (†) 10362; N. SP., (Pr) 10362

TEREBRATULIDAE
Euidothyris, N. SP., (J) 10360
Gryphus, N. SP., 6125
Loboidothyris, N. SP., (J) 10360
Lobothyris, TAX., (†) 10363; MORPH., (†) 10363
Plectoidothyris, TAX., (†) 10363; MORPH., (†) 10363
Ptyctothyris, N. SP., (J) 10360
Rhaetina, N. SP., 6130
Stuartella, TAX., (D) 6126
Terebratula, N. SP., (Tr) 1611; SYN., (†) 10363
Terebratulina, N. SP., (J) 10360, (N) 12399

TEREBRATELLIDAE
Argyrotheca, N. SP., 6125, (J) 10360
Aulacothyris, N. SP., (Tr) 6130
Cistella, N. SP., 4011
Dallina, N. SP., (N) 12399
DIGONELLA, (†) 10363; N. COMB., (J) 10363
Kraussina, N. SP., (Ter) 1613
Obovothyris, TAX., (†) 10363; MORPH., (†) 10363
Ornithella, N. SP., (J) 10360; TAX., (†) 10363; MORPH., (†) 10363
Terebrirostra, TAX., (K) 10363; MORPH., (K) 10363
Zeilleria, N. SP., (J) 1610

BRYOZOA

(Classification according to R. S. Bassler, "Classification of Bryozoa, Fossil and Recent" (1932).)
TAX., 12983

ECTOPROCTA

PHYLACTOLAEMATA

FREDERICELLIDAE
Fredericella, L. H., 6131
Lophopodella, TAX., 10367; DIST., 10367, 14901
Lophopus, MORPH., 14902; L. H., 14902; PHYL., 14902
Pectinatella, L. H., 6131
Plumatella, L. H., 6131

CTENOSTOMATA

VICTORELLIDAE
Victorella, DIST., 3994

VESICULARIIDAE
Bowerbankia, DIST., 14905
Zoobotryon, DIST., 14905

BUSKIIDAE
Buskia, TAX., (E) 14900

CYCLOSTOMATA

HORNERIDAE
Retihornera, TAX., 6132

FRONDIPORIDAE
Frondipora, TAX., 6132
Krusensterna, SYN., 6132
Millepora, SYN., 6132
Rhyzopora, SYN., 6132

FISTULIPORIDAE
Dybowskiella, N. SP., (Cb) 14903
Fistulipora, N. VAR., (Cb) 14904

TREPOSTOMATA

CONSTELLARIIDAE
Stellipora, N. SP., (O) 12392

BATOSTOMELLIDAE
Batostomella, N. SP., (Cb) 14903, (Cb) 14904
Lioclema, N. SP., (Cb) 14904
Lioclemella, N. SP., (S) 12392
Stenopora, N. SP., (Cb) 14903

AMPLEXOPORIDAE
Amplexopora, N. SP., (O) 12392

CRYPTOSTOMATA

FENESTRELLINIDAE
Fenestella, N. SP., (Cb) 14903; N. VAR., (Cb) 14904
Hemitrypa, N. SP., (Cb) 14904
Reteporina, N. SP., (Cb) 14904

ACANTHOCLADIIDAE
Septopora, N. SP., (Cb) 14904

RHABDOMESONTIDAE
Rhombopora, N. VAR., (Cb) 14903

SULCORETEPORIDAE
Goniocladia, N. SP., (Cb) 14903

CHEILOSTOMATA

MEMBRANIPORIDAE
Craspedopora, N. SP., (E) 8293
Membranipora, N. N., (E) 8293

ALDERINIDAE
Membrendoecium, N. SP., (E) 14900, 14905

AETEIDAE
Aetea, DIST., 14905

MICROPORIDAE
Floridina, N. N., (E) 8293
Lunulites, N. SP., (E) 14900; MORPH., (E) 8293
Onychocella, TAX., (†) 8293
Smittipora, DIST., 14905
Vibracella, L. H., (E) 8293

STEGANOPORELLIDAE
Steganoporella, N. SP., (E) 8293

FARCIMINARIIDAE
Nellia, N. SP., (E) 8293; DIST., 14905

BUGULIDAE
Bugula, DIST., 14905

EPISTOMIIDAE
Synnotum, DIST., 14905

SCHIZOPORELLIDAE
Lepralia, N. SP., 14905
Microporella, DIST., 14905
Schizopodrella, N. SP., 14905; MORPH., (E) 14900
Stephanosella, DIST., 14905
Stylopoma, DIST., 14905

SMITTINIDAE
Palmicellaria, N. SP., (E) 8293
Smittina, DIST., 14905

RETEPORIDAE
TAX., 6132
Bulbipora, TAX., 6132
Caberoides, TAX., 6132
Ellipsia, SYN., 6132
Hippopozoon, TAX., 6132
IODICTYUM, 6132; N. SP., 10366; N. COMB., 6132
Lepraliella, TAX., 6132
Plagiopora, TAX., 6132
Psileschara, TAX., 6132
Radulina, SYN., 6132
Retepora, TAX., 6132
Reteporella, TAX., 6132
RETEPORELLINA, 6132; N. COMB., 6132
Rhynchozoon, TAX., 6132, 14905
Schizellozoon, SYN., 6132
Schizoretepora, SYN., 6132
Schizotheca, TAX., 6132
Sertella, N. N., 6132
Sparsiporina, TAX., 6132
Triphyllozoon, N. COMB., 6132

HIPPOPODINIDAE
Hippopodina, DIST., 14905

CREPIDACANTHIDAE
Mastigophora, N. SP., (E) 8293; DIST., 14905

CELLEPORIDAE
Holoporella, DIST., 14905

SAVIGNYELLIDAE
Savignyella, DIST., 14905

ORBITULIPORIDAE
Atactopora, *Atactoporidra* n. n. for, (†) 14900
ATACTOPORIDRA, n. n. for *Atactopora*, (†) 14900; N. COMB., (E) 14900
Manon, SYN., (†) 14900
Orbitulipora, TAX., (E) 14900

PHORONIDEA

(Vacant)

ECHINODERMATA

TAX., 12983; MORPH., 6033; PHYL., 8706; DIST., 8833, 10372

PELMATOZOA

CYSTOIDEA

ANOMOLOCYSTIDAE
Enopleura, N. SP., (O) 12392

ECHINOSPHAERITIDAE
Echinosphaerites, L. H., (O) 12401

BLASTOIDEA

ZYGOCRINIDAE
Zygocrinus, MORPH., (Cb) 14913

CRINOIDEA

DIST., 8296

BATOCRINIDAE
Corocrinus, TAX., (D) 14908
Gennaeocrinus, N. SP., (D) 14908

BOTRYOCRINIDAE
Botryocrinus, N. SP., (D) 14908

BOUGUETOCRINIDAE
Drepanocrinus, SYN., (†) 10374
Roveacrinus, N. SP., (K) 10374; MORPH., (K) 10374

CALOMETRIDAE
Oreometra, Reometra n. n. for, 14907
REOMETRA, n. n. for *Oreometra*, 14907

COLOBOMETRIDAE
Cyllometra, N. SP., 8295

CROTALOCRINIDAE
SYNDETOCRINUS, (†) 4001; N. SP., (S) 4001

HETEROCRINIDAE
Ammonicrinus, MORPH., (†) 17146
Herpetocrinus, MORPH., (†) 17146

HEXACRINIDAE
Camptocrinus, MORPH., (†) 17146
Pterotocrinus, PHYL., (Cb) 10375

PENTACRINIDAE
Cainocrinus, DIST., (J, E) 14906
Isocrinus, N. SP., (K) 14906
Metacrinus, TAX., 14907
Pentacrinus, N. SP., (Tr) 3741

POTERIOCRINIDAE
Delocrinus, N. SP., (Cb) 12609
Erisocrinus, N. SP., (Pr) 8299
Poteriocrinus, N. SP., (D) 14908
Zeacrinus, N. SP., (Cb) 3746

RHODOCRINIDAE
Gilbertsocrinus, TAX., (D) 14908

TAXOCRINIDAE
Taxocrinus, TAX., (D) 14908

THALASSOMETRIDAE
Cosmiometra, N. SP., 8295

TROPIOMETRIDAE
Tropiometra, TAX., 8295; DIST., 1827

ZYGOMETRIDAE
Eudiocrinus, N. SP., 8295

INCERTAE SEDIS
(In Crinoidea)
Spaniocrinus, N. SP., (Pr) 8299

ASTEROZOA

ASTEROIDEA

L. H., (D) 4003

ASTERIIDAE
Asterias, CYT., 2252

ASTERINIDAE
Tremasterinae, SYN., 1826
Asterina, N. SP., 1826; MORPH., 14912
Asterinopsis, N. SP., 1826
Diasterina, N. SP., 1826
Patiriella, N. SP., 1826
TEGULASTER, 1826; N. SP., 1826
Tremaster, TAX., 1826

ASTROPECTINIDAE
Astropecten, DIST., 1827

BRISINGIDAE
Odinia, N. SP., 3999

GONIASTERIDAE
Anthenea, DIST., 1827
Mediaster, N. SP., 4004
Pseudarchaster, N. SP., 1827

HUDSONASTERIDAE
Hudsonaster, N. SP., (S) 10376

LUIDIIDAE
Luidia, DIST., 1827

PALASTERINIDAE
Palasterina, N. SP., (S) 10376
Petraster, N. SP., (S) 10376

PORANIIDAE
Habroporina, SYN., 1826

PROMOPALAEASTERIDAE
Caractacaster, N. SP., (S) 10376
Promopalaeaster, N. VAR., (S) 10376

SCHUCHERTIIDAE
Schuchertia, N. SP., (S) 10376

URASTERELLIDAE
Salteraster, N. SP., (S) 10376
Urasterella, N. SP., (S) 10376

OPHIUROIDEA

TAX., (Cb) 1829

AMPHIURIDAE
Amphipholis, MORPH., 17147
Ophiactis, N. SP., 1827

GORGONOCEPHALIDAE
Astroglymma, DIST., 1827

HEMIEURYALIDAE
QUIRONIA, 3998; N. SP., 3998

OPHIACANTHIDAE
Ophiacantha, N. SP., (K) 10370
OPHIOGLYPHOIDA, N. SUBG., (†) 10370

OPHIOLEPIDIDAE
Ophioplocus, DIST., 1827

OPHIOMYXIDAE
Ophiomyxa, MORPH., 17147

OPHIOTRICHIDAE
Ophiomaza, DIST., 1827
Ophiothrix, MORPH., 17147; L.H., 17734; DIST., 1827

TRICHASTERIDAE
Euryale, N. SP., 1827

ECHINOZOA

ECHINOIDEA

PHYL., 3995; DIST., (N) 12399; *Clypeastrina*, MORPH., 8301

ANANCHYTIDAE
Stereopneustes, DIST., 8300

ARACHNOIDIDAE
Arachnoides, EMB., 1824; L. H., 1824

ARBACIIDAE
Arbacia, CYT., 2237, 2252; EMB., 1745, 10282, 12517, 17048, 17049

BOTHRIOCIDARIDAE
Bothriocidaris, PHYL., 3995

CASSIDULIDAE
Breynella, N. SP., (K) 10174
Cassidulus, N. SP., (Cz) 17144

CENTRECHINIDAE
MORPH., 14909
Astropyga, N. SP., 1821
Centrechinus, L. H., 17734
Echinothrix, HIST., 10369; EMB., 10369

CIDARIDAE
Cidaris, HIST., 10369; EMB., 10369
Paracidaris, N. SP., (J) 10371
Phyllacanthus, DIST., 10372

CLYPEASTRIDAE
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LEPTOCARDII · MARSIPOBRANCHII · OSTRACOPHORI · ARTHRODIRA ELASMOBRANCHII · PISCES

(System of classification, in the main, according to Jordan, "A Classification of Fishes" (1923), with modifications from his later works. For Conodonts see under *Conodonts* in the subject index.)

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(Classification of fossils according to Zittel, "Textbook of Palaeontology," Vol. II (1932).)
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(Arrangement of orders and families, in the main, according to Simpson, "A New Classification of Mammals" (1931). In the Rodentia families and genera are arranged according to Miller and Gidley, "Synopsis of Supergeneric Groups of Rodentia" (1918).)

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